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ALASKA AGRICULTURAL EXPERIMENT STATIONS
SITKA, ALASKA

Under the supervision of the
UNITED STATES DEPARTMENT OF AGRICULTURE

REPORT OF THE ALASKA AGRICULTURAL EXPERIMENT STATIONS

1924

Issued May, 1926

U. S DEPARTMENT OF AGRICULTURE
OFFICE OF INFORMATION
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WASHINGTON
GOVERNMENT PRINTING OFFICE
1926

ALASKA AGRICULTURAL EXPERIMENT STATIONS, SITKA, KODIAK, RAMPART, FAIRBANKS, AND MATANUSKA

[Under the supervision of the Office of Experiment Stations, United States Department of Agriculture]

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REPORT OF THE DIRECTOR

C. C. Georgeson

The weather is the dominating factor in the success or failure of farming operations in Alaska. Growth and maturity of the crops are governed by the length of the frost-free period, the amount of sunshine and rainfall, and the summer temperature. It is therefore necessary constantly to refer to the weather, and to measure results of experiments at each station in the light of weather conditions prevailing there.

The work of each station is treated separately in this report. Each has its own problems to solve, and each is located in a region that is different from all other local regions so far as latitude, climate, temperature, and prevailing economic conditions among settlers are concerned. Some features of the work are of purely experimental nature, as, for instance, testing plants for hardiness and adaptability in various parts of the Territory; other features take into consideration the economic side of problems, such as the relative merits of crops with regard to their cost of production and market value. These features vary, and crops and methods of culture found profitable in one section may not be equally so in another.

SITKA STATION

At the Sitka station, which is representative of the whole coast region, more particularly southeastern Alaska, 49.25 inches of rain fell from April 1 to September 30, 1924, inclusive. During this period of 183 days there were only 34 clear days and the mean temperature was 50.9° F. This region is therefore not suited to grain growing. Grain feeds for livestock can be grown in abundance, but grain crops do not mature. The coast region is eminently suited to market gardening and the production of berries, and the settlers confine their efforts largely to this kind of farming. The Sitka station is maintained to determine the quality, yield, and adaptability to the climate of the various crops. Nothing is raised for market at the station, although surplus products are occasionally sold to local consumers. (Fig. 1.)

VEGETABLES

All the hardy vegetables, especially those whose top or leaf forms the commercial article, can be successfully grown in this region.

Beets.—Of four varieties of beets grown, Early Wonder proved to be by far the best, yielding at the rate of 12 tons and 635 pounds per acre.

Mangels.—Three varieties of mangels were grown. Taarup, a Danish variety which produces a large succulent root, yielded at the rate of approximately 26 tons per acre.

The Cruciferæ family.—Cabbage, cauliflower, kale, and other important members of the Cruciferæ family were raised in flats in the greenhouse, the seed being sown about March 15, or soon thereafter. The young plants were transplanted to larger flats later, and finally set in the open May 15.

Cabbage.—Of the many sorts tested in former years, Early Jersey Wakefield, a well-known commercial variety, is the best for early use, and the large, solid-headed variety, known as Copenhagen Market, is the best for winter use. Copenhagen Market yielded at the rate of approximately 25 tons per acre at the station during the year.

Root maggots attack all members of the Cruciferæ family. The maggots are the larvæ of small flies which lay their eggs on the leaves or on the base of the plants. When the eggs hatch the maggots wriggle down the stems into the ground and begin to suck the juices from the crown of the roots. Various applications, including ashes, lime, and poisoned mixtures containing veratrum, have been tried, but without any appreciable effect. Spraying the plants several times weekly with a solution containing 3 per cent of carbolic acid apparently is the most effective remedy so far tried.

Cauliflower.—Of all the varieties of cauliflower tried, Early Danish Snowball is the best, yielding during the past season at the rate of approximately 13 tons per acre.

Kale.—Improved Long Standing and Decorative, the latter variety having mottled red leaves, were both successful.

Rutabagas.—The variety American Purple Top produced at the rate of 29 tons and 1,270 pounds per acre.

Turnips—The varieties Petrowski and Bortfelder are recommended for general planting. Petrowski, the seed of which has been grown and distributed by the stations for several years, is the best variety tried for table use in fall and early winter. The roots become spongy when stored for long periods. Bortfelder, which is grown especially as cattle feed, is good also for table use. During the year it yielded at the rate of 40 tons per acre.

Carrots.—A number of varieties of carrots did well at the station. Nantes Improved and Chantenay were especially good. Of the varieties grown for stock feed, Yellow Champion Giant yielded approximately 17 tons per acre.

Celery.—Two varieties of celery doing especially well were Paris Self-Blanching and White Plume. Celery growing on a commercial scale is an important feature of market-gardening. The seed should be sown in flats in March, and the plants when 2 inches high should be pricked out 2 inches apart and set in other flats to harden. The following method of culture is successfully used at the stations: Trenches, prepared on rich, well-drained but moist soil, are dug 20 to 24 inches

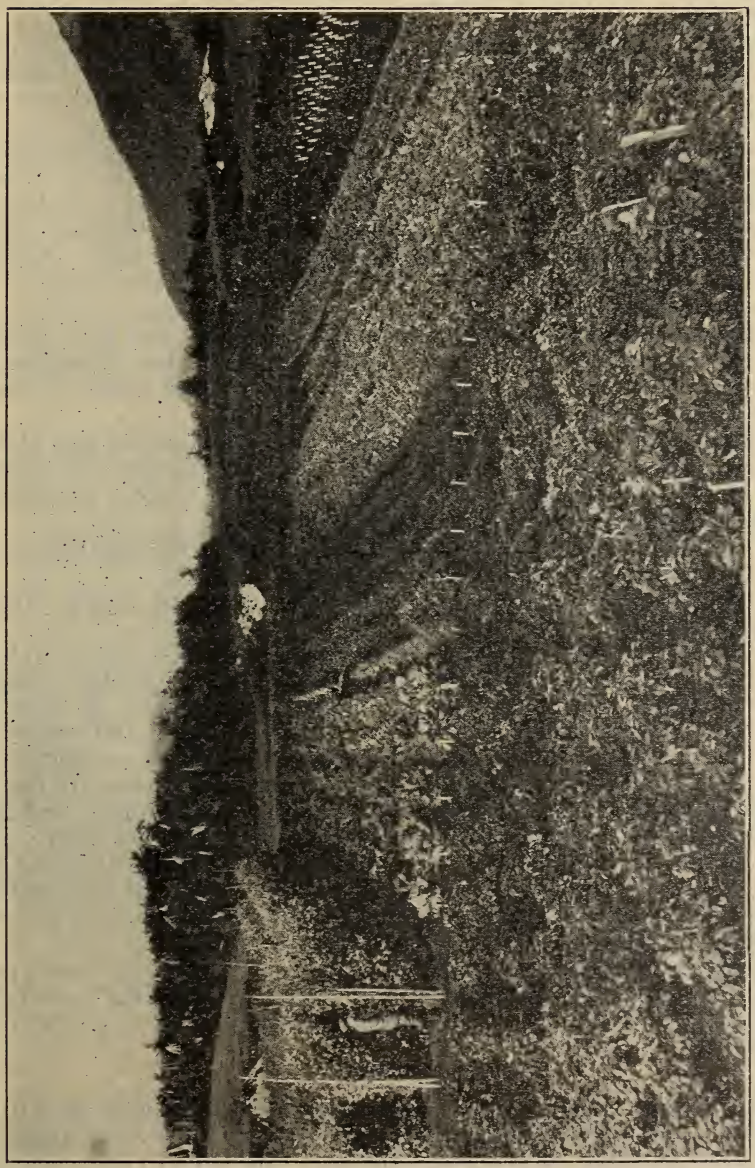

FIG. 1.—Vegetable experiments at Sitka station. Strawberry plats in foreground

deep and a foot wide, and filled to a depth of 4 to 6 inches with well-rotted manure which is thoroughly mixed with a layer of soil 4 inches deep. The plants are set zigzag 6 inches apart in each trench, and as they grow the soil is heaped up around them to blanch the stems. When the trench is full the tops of the plants should stand a foot or more high.

Celeriac.—Excellent celeriac roots were produced at the station last year. Ordinarily, however, the summers are not warm enough for the production of the best roots. Celeriac is used for soups and stews.

Leek.—Three varieties of leek were tried. Carentan Giant did exceedingly well. Both leek and onion seed should be sown in flats early in April and the young plants kept under glass until late in May. They should then be transplanted to the open, being set about 4 inches apart in the row, or 6 inches apart if the soil is rich. Neither leek nor onion seed has made satisfactory growth when planted in the open in this climate.

Onions.—The well-known Danvers Yellow Globe and Red Weathersfield are considered the best varieties of onions for this region.

Lettuce.—Of five varieties of lettuce tried this season, Grand Rapids Forcing made the best growth.

Parsley and parsnips.—Both parsley and parsnips do well at the station. They should be sown in the open as soon as the ground can be put in condition in the spring. Hollow Crown, a standard variety, is considered the best parsnip for Sitka.

New Zealand spinach.—New Zealand was the most satisfactory of three varieties of spinach tried.

Swiss chard.—Lucullus, the only variety of chard grown, was a great success.

Rhubarb.—Alaska produces exceptionally fine rhubarb. It is hardy in the interior, and should be grown in every garden. Being a gross feeder, the plant requires heavy fertilization. A layer of barnyard manure should be placed on the plant in fall and spaded in about it in spring. Stalks measuring more than 3 feet in length and 2 inches in diameter, with leaves 3½ feet wide, are commonly found.

Horse-radish.—Horse-radish is at home in a cold climate, and like rhubarb should be abundantly fertilized. The roots are hardy, and can be dug in fall and stored in moist earth in the root cellar for winter use. Horse-radish is propagated by planting the slender roots, 12 inches or more in length, on a bed raised a foot or so over the general surface. Raised beds facilitate digging.

Asparagus.—Repeated efforts to grow asparagus have been practically unsuccessful, although at the station good stalks have been raised by protecting the plants with a covering of long manure during the winter.

POTATOES

The potato is by far the most important vegetable grown in Alaska. The station has devoted much time to developing varieties that shall be early, mealy, large yielders, with smooth skin, shallow eyes, good quality and form, and fully mature by the last of September. Successful potato-growing depends in large measure on the soil, which should be a well-drained, silty loam containing a good proportion of sand. Some 75 commercial varieties have been grown within recent years and upwards of 1,200 seedling varieties raised

either from seed balls produced at the station, or, in some few instances, from seed brought in from outside sources. Seedlings, which are an improvement over the old standard varieties for this climate, making the best yields on an area of ground 36 square feet or less include Etta, 51 pounds, Imogen, 56 pounds, Irene, 41 pounds, and Judith, 45½ pounds. June, another seedling, produced 67 pounds of an area of 44 square feet. Small tubers growing three years ago on the tops of the variety White Prizetaker have been planted for two years, developing into potatoes of large size, fine shape, and excellent quality, superior to the parent.

Potato scab, a disease not uncommonly found, has been controlled by the stations by treating the seed, prior to planting, with a formaldehyde solution (1 pint to 10 gallons of water). The solution of formaldehyde is poured into a barrel, and the sack containing the potatoes is immersed in the solution for about 3 minutes, or from 5 to 10 minutes if the solution is weaker. Other potato diseases have not been troublesome. Close watch is kept on every individual plant during the growing season, and if signs of disease appear the hill is immediately dug and both tops and tubers are destroyed.

ARTICHOKES

Mammoth White French Jerusalem artichokes, which have been grown for two years at the station, give promise of becoming a valuable forage crop. The tops are readily eaten by livestock and are especially suited to silage making in that the yield is heavy. The tops attained a height of nearly 8 feet (fig. 2). Artichokes require rich soil for best development. In southeastern Alaska the tubers should be left in the ground until spring, when they can be dug and replanted. Since tubers in Matanuska winterkill when left in the ground, it probably will be necessary to dig them in late fall and preserve them in moist earth in a root cellar. At least, they should be given some protection against severe freezing.

SMALL FRUITS

All hardy varieties of small fruits, including currants, gooseberries, and raspberries in particular, are at home is southeastern Alaska. After being tested for three years only the best varieties have been retained for propagation.

Currants.—Wild species of black and red currants are found not only in the coast region, but as far north as Rampart, in latitude 65° 30′ N., and beyond. All varieties of red currants are hardy at Sitka. Tests are being made to determine the relative merits of the varieties. Holland (*Long-bunched Holland*) is the most productive variety so far tried. Black currants do equally well and are prodigious growers. However, there is not much demand for them among settlers. Red currants and gooseberries are favorites everywhere.

Gooseberries.—What has been said about currants also applies to gooseberries. Wild gooseberries (*Ribes lacustre*) are found growing in the mountains of the coast region. Of the cultivated varieties tested at the station, Whitesmith and Smith (*Smith's Improved*) are the best. Unsuccessful attempts have been made to improve the varieties in culture by raising seedlings from them.

Raspberries.—Of the many commercial varieties under test, Cuthbert is by far the best. It is being propagated for distribution,

and is a prodigious yielder of large, well-flavored fruits when grown on good soil. A row of Cuthbert canes produced at the rate of approximately 6,146 quarts of berries per acre during the year. Blackcap varieties are not a success and require warmer summers than can be had in southeastern Alaska.

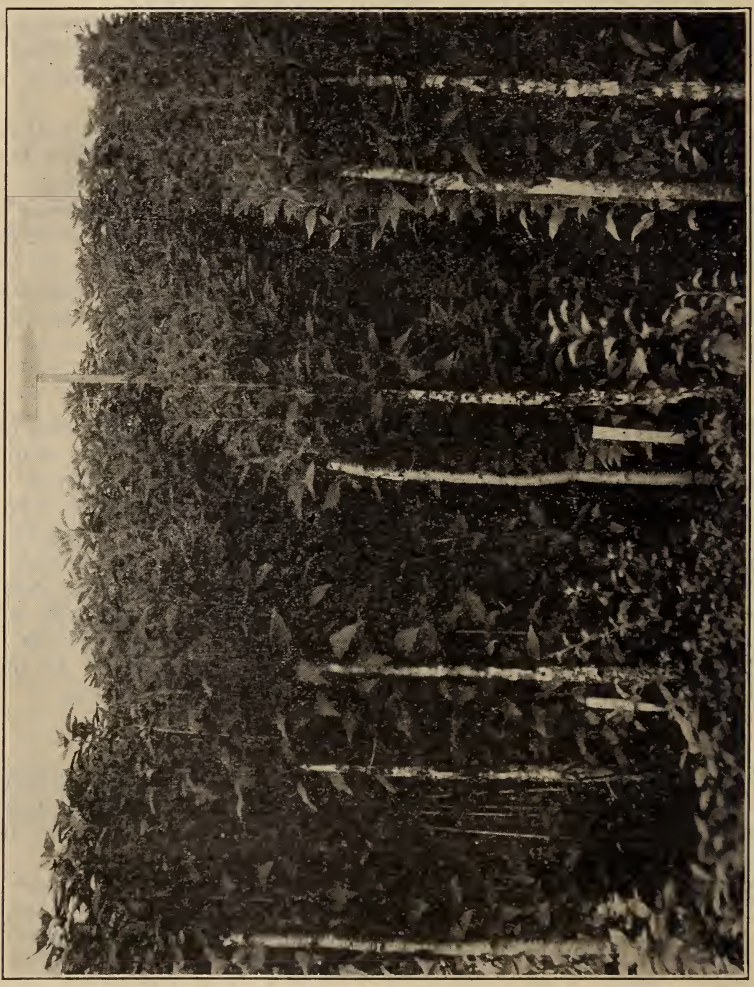

FIG. 2.—Giant French White Jerusalem artichokes at Sitka station, nearly 8 feet tall. The tops make excellent silage

Blackberries.—Blackberries have been repeatedly tested at the station, but are always a partial or complete failure, and can not be recommended for this region.

The Logan blackberry plants (commonly called loganberries) under test produced a small crop of berries last year. It appears that they can not be made a commercial success in Alaska.

Strawberries.—The strawberry work in progress at the station for a number of years is being continued.[1] New seedlings from crosses

[1] For detailed information, see Alaska Stas. Bul. 4, "Production of improved hardy strawberries for Alaska," available copies of which may be had upon application to the director.

have been produced and accurate records kept of the 1,500 seedlings already in cultivation. A careful examination of the records showed it advisable to discard all but 268 numbers. These have been graded on productivity and vigor of plant, and size, flavor, and firmness of fruit. Results of the experiments show that the early crosses between cultivated varieties and the wild species (*Fragaria chiloensis*) are hardier than those between hybrids and other cultivated commercial varieties. All the hybrids are hardy at Sitka, but they are being tested further at the interior stations, where hardiness is of first consideration.

THE ORCHARD

Apples.—Forty varieties of apples were originally planted in the small test orchard of the station. Most of these have either bloomed profusely and failed to set fruit, or set fruit which failed to mature. The most promising varieties, including Lowland Raspberry (*Livland Raspberry*), Keswick (*Keswick's Codlin*), Early Harvest, Transcendent crab, and Yellow Transparent, have been retained. Yellow Transparent, an early summer apple in the States, but a fall apple in Alaska when it matures at all, stands at the head of the list. It is the best of the many varieties that have been propagated and distributed by the station. Trees of bearing age are now to be found in nearly all parts of southeastern Alaska and in some parts of the interior.

Pears.—The few varieties of pears under test for some years have not as yet produced fruit. Evidently the pear can not be made a success in Alaska.

Plums.—What has been said about pears applies equally well to plums. Few of the commercial varieties, including Bradshaw, Imperial Gage, and Reine Claude (*Green Gage*), have produced blossoms, and none any fruit.

Cherries.—Several varieties of sour-cherry trees have fruited at the station for some years. Of these, Early Richmond is apparently the best. Wragg and Montmorency occasionally produce small crops, but are not a success. The few sweet-cherry trees at the station blossom, but produce no fruit, or fruit which fails to mature.

Miscellaneous fruits.—One each of peach, apricot, sweet-cherry, and plum trees is being trained to grow against the wall of a building. So far, the Alexander variety of peach alone has borne fruit in this favorable situation.

ORNAMENTALS

Trees.—Few deciduous trees commonly grown for ornamental and shade purposes appear to be suited to this climate. Specimens of birch, mountain ash, larch, Norway maple, sycamore, elm, and poplar are now under trial. The mountain ash does remarkably well. It is a handsome tree regarding growth and foliage, and is covered with clusters of red berries in late summer and fall. The Norway maples and poplars are doing well, but are still too young to determine their merits.

Shrubs.—Of the many varieties of ornamental shrubs under test, the Japanese rose (*Rosa rugosa*) and Tatarian honeysuckle (*Lonicera tatarica*) stand out the most prominently. The Japanese rose was introduced and propagated by the station and distributed to numerous settlers in the Territory. It is hardy in the interior even without

special protection, but makes a much more stunted growth than in the coast region. Its dark green, abundant foliage, and large, sweet-scented pink roses, are appreciated everywhere. The Japanese rose can readily be propagated from seed. Some of its hybrids are hardy in southeastern Alaska, but not in the interior. A double-flowered hybrid, which in all other respects resembles the Japanese rose, is a highly prized bush, bearing large, sweet-scented, very double flowers which last longer than the single ones. The double-flowered varieties are grown with difficulty from cuttings, but can be readily propagated by layering the branches. Tatarian honeysuckle in several varieties is a great success throughout southeastern Alaska, and is hardy as far north as Matanuska.

Other ornamentals giving promise of maintaining life here include lilacs, deutzia, forsythia, hypericum, spireas (several varieties), snowberry, viburnum, weigelia, azaleas, and rhododendrons.

Vines.—Vines under trial include ampelopsis, clematis, honeysuckle, kudzu, and wistaria.

Herbaceous perennials.—A large number of hardy perennials, including phlox (several varieties), oriental poppy, columbine, helianthus, Lychnis, and peonies, can be successfully grown in settled parts of Alaska. Some of these plants are grown for purposes of comparison and are not distributed to settlers. They are so easily propagated from seed that it is not necessary to distribute them.

Annuals.—Annuals grown in the Northern States as a rule do well in Alaska. They bloom profusely, and in most cases are raised from seed which can be sown in the open. Asters, stocks (10 weeks'), and calendulas, however, should be sown early in boxes and set out the latter part of May. Nearly all seed catalogues contain information concerning the culture of annuals.

Bulbs.—In the fall of 1923 many varieties of tulip and narcissus were obtained from the plant-introduction garden at Bellingham, Wash., for test to learn the possibility of their growing in Alaska and for distribution among settlers. Many of the bulbs bloomed in the summer of 1924, but it is as yet too soon to state whether they can be propagated in southeastern Alaska. The gladiolus was in like manner introduced, being purchased from seedsmen, and many varieties bloomed late in the summer. Gladioluses give promise of becoming a valuable acquisition to the ornamental plants.

THE NURSERY

It has been the custom for some years to send out nursery stock to all settlers requesting it. Early-maturing apple trees, plants of currants, gooseberries, and raspberries, hardy ornamentals of easy propagation, such as the Japanese rose and Tatarian honeysuckle, strawberry plants, and seed potatoes are distributed free of charge. Several thousand plants were distributed during the year to 164 persons asking for them. Such distributions are very much appreciated by settlers throughout the Territory.

BUILDINGS

One small building, 30 feet long by 12 feet wide and 10 feet high to the ceiling, was erected during the year. It contains three rooms and provides shelter for the teamster and a temporary assistant horticulturist who are needed at all times.

MATANUSKA STATION

Climatic conditions at Matanuska, latitude 61° 30′ N., and at Fairbanks, latitude 64° 51′ N., are very different, notwithstanding the separation of the two stations by only 315 miles. At Matanuska the last killing frost occurred May 13, and the first killing frost September 23, making a frost-free period of 133 days. The rainfall for the calendar year totaled 13.7 inches and for the frost-free period 8.02 inches. Normally the rainfall averages about 14 inches, and the snowfall between 3 and 4 feet. The snowfall of the winter was 20 inches. The amount of moisture in the ground is governed to a great extent by the fall of snow, which in normal years remains on the ground from the permanent freeze-up in fall until late in April. Usually the rainfall of May and June is light, and unless the soil has absorbed a large quantity of snow water, newly seeded crops suffer from lack of moisture. The early summer of 1924 was dry, and as a result all grain crops were slow in starting, while berry crops, particularly strawberries, suffered. Field work began early in May as soon as the more elevated sections could be put in condition for seeding.

FIELD CROPS

Field crops consisted of 49½ acres of oats and oats and vetches. 9⅞ acres of barley, 3¾ acres of wheat, 3 acres of peas, 2¾ acres of vetches, 1¾ acres of potatoes, and 6 acres of roots, consisting of mangels, rutabagas, turnips, and carrots. There were in addition 62 grain-test plats of 1/120 acre each. An accurate account was kept of every field and of every crop of grain, so that the cost of production and money value of the crop are known and recorded for the crops listed.

Grain

Spring wheat.—The station has clearly demonstrated during several years that early maturing varieties of spring wheat can be successfully grown in this region in normal seasons. Of these, Siberian No. 1 and Romanow have been tried on a field scale. Siberian No. 1, seeded May 9 on 2½ acres of fall-plowed land, made a perfect stand. Ripe August 20, 102 days after seeding, this wheat stood in shock until October 4, when it was stored. Later it was threshed and showed considerable shattering. The crop yielded approximately 17.7 bushels per acre, which at the local market price of $2.40 per bushel, is worth $42.48 per acre. If $5 per ton for each 1,200 pounds of straw harvested per acre is added to this figure, the value of the crop is increased to $45.48. The profit per acre would be $22.68, the cost of production being only $22.80.

The variety Romanow has been grown for 15 years and has ripened in some parts of the Territory every year. It requires a season of 8 to 15 days longer than Siberian No. 1, and usually yields 2½ to 5 bushels more per acre. It is a good milling variety, produces straw of medium heavy growth, and medium large, hard kernels. Sown May 9 at the rate of 75 pounds per acre on 1¼ acres of land, Romanow made a good stand. The crop was ripe August 27 and stood in the shock until October 4, when it was stored. It shattered little in handling, and when threshed yielded approximately 17.6 bushels of wheat and 1,400 pounds of straw per acre. Since the cost of growing the crop was only $22.60 per acre, the profit, at present market value of $45.74, was $23.14 per acre.

Test plats, on which vetch had been grown for seed in 1923, were fall-plowed, spring-disked, and planted with 30 varieties of spring wheat to determine the varieties maturing in the Matanuska Valley and the best yielders for further work. The more promising varieties ripened in 93 to 116 days after seeding, and yielded 20 or more bushels per acre. The plats were not replicated, however, and therefore an average can not be had. Table 1 gives the record of all the varieties tested.

TABLE 1.—*Results of variety test of wheat seeded May 17, 1924, at the Matanuska station*

Variety	Estimated yield per acre	Length of time required to mature from seed	Variety	Estimated yield per acre	Length of time required to mature from seed
	Bushels	*Days*		*Bushels*	*Days*
Tulun	22.6	93	Ladoga	22.6	116
Irkutsk	20.0	93	Federation (C. I. No. 4733)	31.1	116
Siberian No. 1	22.6	102	Kota	20.0	116
Beta	17.0	102	Federation No. 503	37.1	120
Omega	24.8	102	Preston	31.1	122
Hybrid No. 64	20.0	102	Champlain (C. I. No. 4782)	22.6	122
Hybrid No. 29	17.0	102	Haynes Bluestem No. 2874	24.8	122
Prelude	17.0	106	Houston	30.1	122
Hybrid No. 63	28.1	111	Kota × Marquis	22.6	124
Ruby	20.6	112	Do	16.6	124
Hybrid No. 62	29.0	116	Marquis (C. I. No. 3641)	37.3	130
Do	24.8	116	Pioneer	16.6	130
H. G	30.1	116	Red Fife	17.0	130
Power (C. I. No. 6397)	16.6	116	Wellman	30.1	130
Red Bobs	31.6	116	Glyndon	31.5	130

Each of these varieties was seeded on a 1/120-acre plat, and is named in the order of ripening. The first 10 varieties can be depended upon to mature at Matanuska in normal years. The next 8 varieties, Hybrid No. 62 to Kota, inclusive, may mature in normal years, but are likely to fail. The last 12 named require from 120 to 130 days to mature and should not be sown. The first 5 varieties were obtained from the Imperial Russian Experiment Station at Tulun, Irkutsk, Siberia, and have as their leading characteristics short straw, short to medium heads, small, hard kernels, and early maturity. Of these 5 varieties, Siberian No. 1 is the only one which has been freely distributed and generally grown. Hybrid No. 29 is the result of pollinating Siberian No. 1 with Irkutsk. Both parents are very early; the hybrid also is early, and in this test yielded less than either parent. Hybrids Nos. 62, 63, and 64 were produced by the stations. Siberian No. 1 was the mother of each, being pollinated with Marquis for Hybrid No. 62, with Romanow for Hybrid No. 63, and with Lagoda for Hybrid No. 64. Romanow and Ladoga are of Russian origin and have been grown at the station for many years. They are intermediate in earliness and in growth between the small-grained, early sorts, and the late, tall-growing varieties grown mostly in the States. The variety H. G. is also of Russian origin, and has been classed with the earliest. It is a small-growing wheat with a yellow kernel. In this test it ranks with the large, late-maturing varieties in yield, producing 30.1 bushels per acre. Federation wheat, of which there are several varieties, is a favorite in Oregon, but is too late to be depended upon for Alaska. Selections of all the varieties were made in the field for future tests.

Barley.—Barley is rapidly gaining favor with the farmers of Alaska because of its suitability to the climate and its value as a stock feed.

On May 10, Hybrid No. 19 was sown at the rate of 90 pounds per acre on 2½ acres of old land which had been fall-plowed and spring-disked. The straw made fair growth and the heads were of medium size and well filled. Harvested August 27, the crop was threshed from the stock September 12, yielding 20.8 bushels of grain and 2,500 pounds of straw per acre. The grain had a market value of $49.92 and the straw $12.50 per acre. Produced at a cost of $28.10 per acre, it netted a profit of $34.32 per acre.

On May 8, Hybrid No. 28, a black barley, 90 pounds per acre, and vetch, 45 pounds per acre, were sown on 4⅜ acres of old land which had been fall-plowed and double-disked in the spring. The grain tillered little, the straw was short, and the heads were small to medium. The vetch growth was the poorest raised at the station. The crop suffered from drought during June and part of July. The barley was ripe and harvested August 17, and threshed from the shock September 8, yielding 14.6 bushels of grain and 1,500 pounds of straw per acre. The crop had a market value of $42.59 and was produced at a cost of $29.04 per acre.

On May 7, common white hull-less barley was sown at the rate of 90 pounds per acre on 3 acres of old land which had been planted with peas in 1923, plowed in the fall, and double-disked in the spring. This land was badly infested with lamb's-quarters. The crop grew slowly and tillered little. The grain was ready for the harvest August 31, and threshed from the shock September 12, yielding 12 bushels of grain and 1,000 pounds of straw per acre. The market value of the crop was $33.80 and the production cost $23.97 per acre. The land was rented in exchange for one-third of the crop grown on it. The crop was therefore produced at a loss of $1.44 per acre.

Each of 18 varieties of barley was planted May 20 on 1/120-acre plats. Some of the hybrids produced at the Rampart station took first place in yield. Table 2 gives the record of all the varieties tested:

TABLE 2.—*Results of variety test of barley seeded May 20, 1924, at the Matanuska station*

Variety	Estimated yield per acre	Length of time required to mature from seed	Variety	Estimated yield per acre	Length of time required to mature from seed
	Bushels	*Days*		*Bushels*	*Days*
Hybrid No. 20	37.3	93	Hybrid No. 14 [2]	25.7	103
Do	35.3	93	Do	24.1	103
Hybrid No. 44	33.7	93	Do	19.5	103
Smoothawn × Manchurian	30.1	97	Hull-less (S. P. I. No. 19851)	33.7	103
Hybrid No. 28 [1]	27.3	101	Olds Montana	33.7	103
Hybrid No. 28 [2]	22.5	101	Boehme	28.8	107
Hybrid No. 19	24.5	103	Hybrid No. 14 [1]	35.3	109
Do	30.5	103	Do	31.3	109
Do	35.3	103	Hybrid No. 14 [3]	15.1	111

[1] 6-rowed. [3] 2-rowed.

Oats.—Oat varieties, Norwegian Black, La Conner White, and Kherson were sown on 49½ acres of land for grain and silage. Oats and vetch, oats and peas, and oats, peas, and vetches did fairly well when grown in combination, and constituted the main field crops of

the station. On May 1, 4¾ acres of land was seeded with Norwegian Black oats at the rate of 90 pounds per acre and vetch at the rate of 42 pounds per acre. The vetch made a light stand and showed above the oats before harvest. The oats did fairly well and produced small but well-filled heads, straw of medium growth, and few tillers. The oats were ripe August 12, 103 days after seeding. Threshed from the shock September 9, the crop yielded 35⅓ bushels of grain and 1,500 pounds of oat and vetch straw per acre. The grain had a market value of $45.06 and the straw $15 per acre. Produced at a cost of $35.27 per acre, the crop yielded a profit of $24.79 per acre.

On May 14 and May 15 Norwegian Black oats, 91 pounds per acre, and Canadian White field peas, 50 pounds per acre, were sown on 4.9 acres of new land which was cleared in 1923. The oats produced a heavy growth of straw, and the peas showed above the oats at harvest time. Cut August 29, 107 days after seeding, the crop cured in the shock and was threshed from the field September 11. The yield was 67¾ bushels of oats and peas and 1½ tons of straw per acre. The grain had a market value of $86.72 and the straw $30 per acre. Produced at a cost of $39 per acre, the crop yielded $77.72 per acre.

Seeded May 10, at the rate of 90 pounds per acre, on 5½ acres of old land which had been fall-plowed and double-disked in the spring, Norwegian Black oats were ripe for harvesting August 15 and threshed from the shock September 2, yielding 39 bushels of grain and 1 ton of straw per acre. The grain had a market value of $40.56 and the straw $10 per acre. Produced at a cost of $25 per acre, the crop yielded a profit of $25.56 per acre.

La Conner White oats, 90 pounds per acre, and common vetch, 30 pounds per acre, were sown May 9 on 3 acres of old land which had been fall-plowed and double-disked in the spring, resulting in a perfect stand, but the oats tillered very little. The oats were ripe and harvested August 16, 99 days after seeding. Threshed from the shock September 2, the grain yielded 42 bushels per acre worth $43.68, and the oats and vetch straw 1,500 pounds, worth $15 per acre. Produced at a cost of $33 per acre, the crop yielded a profit of $25.68 per acre.

Four acres of new land, which was cleared during the summer of 1923, fall-plowed, and double-disked in the spring, was seeded May 14 to La Conner White oats, 90 pounds per acre, and Canadian field peas and common vetch, each 25 pounds per acre, resulting in a perfect stand. The oats tillered well and made a heavy growth. Both peas and vetches appeared above the oats August 15. The crop was cut for silage August 26 when the oats were in the soft dough stage, yielding 9 tons of silage per acre. The cost of production was $65.43 per acre, or $7.27 per ton, and the estimated value of the silage was $20 per ton.

On May 12, 3½ acres of old, rented land, was seeded to La Conner White oats and vetch after being fall-plowed and double-disked in the spring. The crop tillered very little. The land was infested with lamb's-quarters, which nearly choked the grain. Harvested August 30, the crop cured in the shock and was threshed September 12, yielding 24¼ bushels of grain and 1,200 pounds of straw per acre. The market value of the grain and straw was $42.86 per acre. Produced at a cost of $27.07, the crop yielded a profit of $15.79 per acre. One-third of the crop was given in exchange for the use of the land

producing it, leaving a profit of $1.49 per acre over the cost of production.

Fourteen varieties of oats were seeded May 20 on 1/120-acre plats each (fig. 3). The plats were not replicated. Table 3 gives the record for the varieties.

TABLE 3.—*Results of variety test of oats seeded May 20, 1924, at the Matanuska station*

Variety	Estimated yield per acre	Length of time required to mature from seed	Variety	Estimated yield per acre	Length of time required to mature from seed
	Bushels	*Days*		*Bushels*	*Days*
Hybrid No. 51	39.8	93	Twentieth Century	42.8	103
Do	33.8	93	Leader	33.8	103
Hybrid No. 36	42.8	93	Hybrid No. 52	46.7	111
Hybrid No. 51	33.8	95	Leader	62.3	111
Do	33.8	95	No. 72 (Ontario Agricultural College)	46.6	111
Gold Rain	58.4	103	Hansen	33.8	123
Hybrid No. 52	33.8	103			
Heavy Weight	59.3	103			

FIG. 3.—Oat variety plats, Matanuska station

LEGUMES

Peas.—The season in the Matanuska Valley is sufficiently long to mature the common white Canadian field pea. The crop produces abundant forage and grain and can be grown at a profit. One and one-fourth acres of hillside land was seeded to peas at the rate of 116 pounds per acre May 1. The crop was mature and harvested by hand August 16 and 17, and cured on pole racks. It was threshed October 29, yielding 20.8 bushels of peas and 2 tons of straw per acre. The crop had a market value of $92.40 per acre. Produced at a cost of $46.50 per acre, it yielded a profit of $45.90 per acre.

One and three-fourths acres of new land, which was cleared last year, was seeded May 19 at the rate of 100 pounds of peas per acre. Seeding being late, only 60 per cent of the crop matured. It was cut by hand in early September, cured on pole racks and sharpened cocking stakes, and threshed October 29, yielding 25.14 bushels of peas and 2 tons of straw of excellent quality per acre. The market value of the peas was $75.72 and of the straw $40 per acre. Produced at a cost of $87.81 per acre, the crop yielded a profit of $27.91 per acre.

Vetch.—On May 6, 2¾ acres of old land was seeded with a grain drill to common vetch at the rate of 100 pounds per acre. The pods were partly ripe September 12, and the crop was cut and placed on pole racks to cure. Threshed October 27, it yielded approximately 19.6 bushels of seed and 1½ tons of straw per acre. The market value of the grain was $58.59 and of the straw $30 per acre. Produced at a cost of $42.88 per acre, the crop yielded a profit of $45.71 per acre.

Alfalfa.—Station-raised seed of Grimm alfalfa, which was sown May 19 on a small plat on a hillside, resulted in a good stand but an unsatisfactory yield, on account of drought and the ravages of insect pests. Some scattered roots of an old planting produced a heavy growth of foliage, but the stand set no seed.

The yellow-flowered sort (*Medicago falcata*), which was seeded in 1922, made little growth during the season and set few seeds. A top-dressing of manure applied to the crop late in July resulted in some growth after the August rains. A part of the plat which was treated with lime in 1923 showed beneficial results during the year.

All other varieties of alfalfa seeded in 1923 winterkilled.

Clover.—The several varieties of clover planted in 1922 and 1923 winterkilled. No variety of clover has as yet been found to survive the rigors of the interior winters.

Root Crops

Potatoes.—The potato crop of the station was grown on a hillside having a 35 per cent grade. The land was cleared in the summer of 1923 and planted May 20 to May 24 with potatoes in rows extending north and south, 8 varieties being grown on a field scale and 26 varieties in duplicate test plats. All cultivation was done by hand. The land was not uniform and the yields are therefore not comparable. Growth was noticeably retarded by the dry weather of June and part of July, but was revived by the rains of late summer. The tubers, however, did not mature well. A yield of 21,178 pounds of potatoes costing $1.35 per 100 pounds or $170.21 per acre was obtained from 1.68 acres tested on a field scale. Eighty-five per cent of the crop was first-grade potatoes having a market value of $60 per ton, or $321.45 per acre, and yielded a profit of $151.24 per acre.

Of the 26 varieties grown in the test plats, 19 were seedlings which originated at the Sitka station. The first planting proved to be on poor soil on the hillside, and duplicate plats were therefore run on bench land June 21. The potatoes were well sprouted before planting, but the season was too far advanced for the production of a good crop. Sitka seedlings which were outstanding in production included Irene No. 764, Ina No. 970, Edina No. 759, Jean No. 1006, Elsie

No. 714, and Beatrice No. 406. Commercial varieties ranking with the best included Earliest-of-All and Producer.

Rutabagas.—Broadcasted on an acre of new land June 1, rutabagas produced an irregular stand, chiefly because of dry weather. The roots harvested in September weighed 31,133 pounds. The crop cost 60 cents per 100 pounds.

Mangels.—An uneven stand was obtained from the variety Heavy Cropper, sown May 17 in rows 18 inches apart on an acre of old land. The crop weighed 17,655 pounds and was harvested late in September. The cost of production was 73 cents per 100 pounds.

Carrots.—Carrots for stock feed were seeded May 16 and May 17 in rows 18 inches apart on an acre of land; but, on account of dry weather produced an uneven stand, necessitating hand cultivation. The crop weighed 12,346 pounds and was produced at a cost of 98 cents per 100 pounds.

Artichokes.—Mammoth White French Jerusalem artichokes, introduced by Joseph C. Sibley, of Franklin, Pa., in 1923, were again tested to determine whether the tubers would withstand wintering in the ground. They winterkilled and new stock had to be obtained from Sitka. Planted May 16 on a hillside having a south slope the crop came up promptly enough but grew slowly, the tops averaging not over 4 feet in height. Nitrate of soda, applied as a stimulant to growth, was prevented from becoming available to the plants until too late to be of benefit. The tubers were small and were stored for the winter.

Sunflowers

One-eighth acre of hillside land was sown with Russian Giant and Improved Russian sunflower seed. Improved Russian made a perfect stand, grew slowly until the rains of August came, and attained an average height of 7 feet. The plants were cut for silage September 8, yielding approximately 20 tons per acre.

Grasses

Two acres of old land and 5 acres of new land were seeded to slender wheat grass (*Agropyron tenerum*), resulting in a good stand. Seeded in 1922 on a ¼-acre plat, this grass made good growth and bore seed which matured August 25.

Seeded in former years, smooth brome grass (*Bromus inermis*) provided good pasture on several acres for six weeks, beginning June 1. It was then given a rest until September 1, when it stood 18 inches high. The grass afforded a good pasture until the freeze-up of October 10.

HORTICULTURE

Fruits

As yet the horticultural work of the station is confined chiefly to small fruits which have been introduced from the Sitka station for propagation and distribution. A number of young apple trees of the Yellow Transparent variety have also been received from the Sitka station. Currants, gooseberries, and raspberries are productive in this region. The only variety of raspberry that is recommended for general planting is the Cuthbert, which outyields both the Ranere (*St. Regis*) and the Sunbeam, and produces larger, better-flavored

fruit. Raspberries should be given some winter protection. The canes should be bent to the ground and covered with spruce boughs and straw just before the extreme cold weather sets in. The covering can be weighted down with poles and removed in the spring, when the canes should be thinned out. Currants and gooseberries are hardy without protection at the station. Strawberries were only partly successful the past season. Many of the plants winterkilled, the litter given them for winter protection having blown off.

Vegetables

Nearly all the ordinary garden vegetables, including cabbage, kale, cauliflower, carrots, parsnips, and peas, can be grown successfully in Matanuska. Early varieties of spring beans develop usable pods in late summer, but they can scarcely be termed a success.

Flowers

Annual flowers do exceedingly well at Matanuska.

LIVESTOCK

Cattle

The Milking Shorthorn herd of the station now includes the herd bull, Waterloo Heir (fig. 4), 6 cows, 1 heifer, and 3 heifer and 2 bull calves. One bull calf was sold during the year and one calf died at birth. Individual feeding and milk records of the cows are being kept. Four young cows possess good dairy characteristics, yielding large quantities of milk during comparatively long periods. Lady Belle yielded 7,251 pounds during 346 days, or an average of 21 pounds daily; Dairymaid yielded 6,034 pounds during 286 days, or an average of 21 pounds daily; Lucile yielded 5,053 pounds during her first lactation period of 262 days, or an average of 19.2 pounds daily; and Valley Queen yielded 4,505 pounds during her first lactation period of 236 days, or an average of 19 pounds daily. Lucile and Valley Queen were still giving 18 pounds of milk daily at the time the records were made. All feed except some oil-cake meal consumed by the herd since last September was grown at the station. Each cow is charged at local prices with the quantity of feed she consumes. The calves are hand fed, and the quantity of milk consumed by them is noted.

During the year the herd bull was loaned free of charge to settlers for service to 11 cows.

Sheep

Eight Cotswold grade ewes dropped 11 lambs, 3 of which died. The flock is headed by a purebred Cotswold ram.

The sheep industry in the Matanuska Valley can make little headway until the dogs are kept under control. Last August dogs attacked the flock, injuring all but one lamb. By careful nursing the station succeeded in saving 4 ewes and 4 lambs of the flock. The ram fortunately was not with the flock at the time of attack.

Goats

One purebred Toggenburg buck was transferred from the Fairbanks to the Matanuska station during the year. He was loaned out for service to does belonging to settlers. The buck was old, and died from natural causes in December.

Horses

Two mares, purchased in Seattle in 1917, and one young colt acquired from the engineering commission in 1923, constitute the work team of the station. The mares are getting old and need replacement.

Horses can be bred successfully in interior Alaska. A young stallion of the Percheron type should be purchased for service during a given period of each spring at the Matanuska and Fairbanks stations. No stallion has as yet been kept in Alaska. The stallion could be worked in exchange for his feed, and bred to privately owned mares for the production of work horses which would be at home in Alaska.

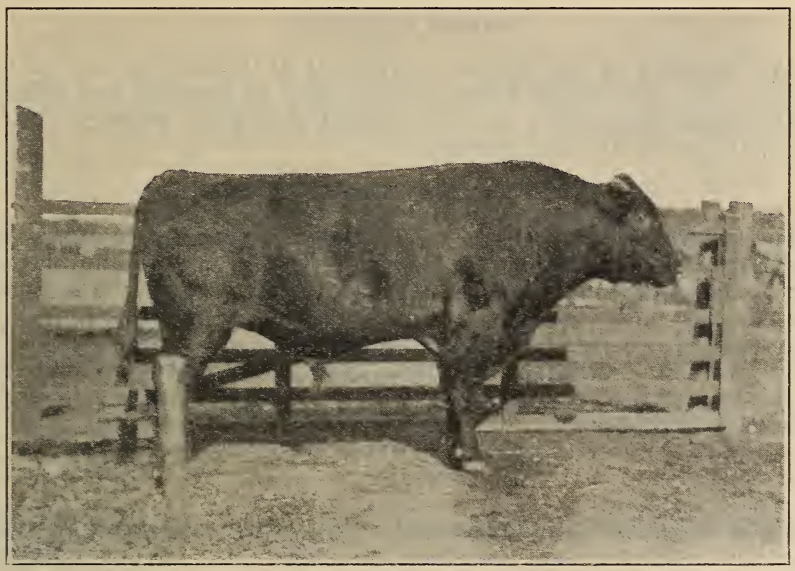

Fig. 4.—Milking Shorthorn bull, Waterloo Heir, Matanuska station

STATION IMPROVEMENTS

The clearing of the 14 acres begun in 1923 was completed in the spring preparatory to seeding with oats for hay and forage, and 22¼ acres were made ready for the stump puller and should be cleared in the summer of 1925. All clearing was done as economically as possible, the timber being slashed, piled, and burned during dry periods. The cost of clearing varied from $30 to $60 per acre, depending upon the growth of the timber on the land.

Roads were constructed to various parts of the station farm. The cost of labor for this purpose amounted to $107. One hillside road was graded at a cost of $24.

Posts were renewed and wires restrung on 150 rods of old fence; four wires were strung on 200 rods of new fence, and six wires on 80 rods of bull-pasture fence.

The original well failing to meet the needs of the station, a 4-inch steel casing was sunk to help supply water. Good water was encoun-

tered at a depth of 74 feet and carried through pipes to the barn and the house. A pump house having a concrete basement was built for the new well.

The pump house also shelters an electric plant which not only furnishes lights to an aggregate of 2,000 watts distributed to the barn and other buildings, but also reduces liability to fire from the formerly used lanterns. A motor was purchased with the plant to furnish power for stationary work, grinding grain, cutting roots, running lathes, and pumping.

The large attic in the main cottage was divided into three bedrooms and a bathroom to accommodate station employees.

FAIRBANKS STATION

WEATHER CONDITIONS

The snowfall of the winter of 1923–24 at Fairbanks was 23.97 inches. The last killing frost occurred May 14 and the first killing frost August 14, giving a frost-free period of 92 days, which is 9 days less than for the 14-year average.

GENERAL WORK

The general work of the season consisted, among other things, in repairing and maintaining the buildings, sawing and hauling wood, overhauling and repairing machinery, and fall plowing. A 40-acre tract in the southwestern part of the reservation and adjoining the land which was fenced in 1923 was inclosed with a 5-strand wire fence for seeding to grasses for the yak cows and the Galloway bull. Approximately half of each area produces grass and the rest is covered with moss and brush.

GRAINS

Oats

About 50 acres of land was seeded partly with oats and partly with oats and vetch for hay. Seeding was begun May 26 and finished June 3. Approximately a ton per acre would have been harvested had not rabbits invaded the field at various times and destroyed 25 per cent of the crop.

A half-acre plat was seeded to Hybrid No. 51 May 15. Ripe and harvested August 20, the crop yielded 300 pounds, or at the rate of 18.7 bushels per acre. A third-acre plat, seeded May 15 with Canadian oats, yielded at the rate of 30½ bushels per acre. A yield of 16 bushels per acre was obtained from a 3-acre field of Finnish Black oats sown with common spring vetch, but nearly 50 per cent of the crop was damaged.

Treatment for smut.—Six $\frac{1}{18}$-acre plats were seeded May 24 with Finnish Black oats, all seed except that sown in the check plat receiving an antismut treatment. A good stand was obtained from all plats, and after the oats fully headed a count was made of the total number of heads produced per square rod and the number showing smut. The oats which were treated with formaldehyde and uspulun ripened slower than did the others. All plats were harvested August 18, yielding 348 pounds of grain, or at the rate of 32.6 bushels per acre. Table 4 gives the results of the test.

TABLE 4.—*Result of treating oats for smut control at the Fairbanks station*

Plat No.	Treatment	Total heads per square rod	Smutted heads per square rod	Clean heads per square rod	Proportion of smut
					Per cent
350	Check (no treatment)	4,415	621	3,795	14.06
351	640–S. (6 ounces per bushel) [1]	4,740	438	4,302	9.24
352	640 (3 ounces per bushel) [1]	4,733	527	4,206	11.13
353	Copper carbonate (3 ounces per bushel)	4,592	209	4,383	4.55
354	Formaldehyde	3,847	7	3,840	.18
355	Uspulun (soaked for 2 hours)	4,693	175	4,518	3.73

[1] The Corona compounds 640 and 640–S are said to be copper carbonate, but 640–S contains in addition a little silica; that is to say, 640–S is a little more diluted than 640.

BARLEY

Seed of Hybrid No. 19 was treated for smut control and sown May 17 on ⅓-acre plats. The seed on plats Nos. 1, 2, and 3 was treated with hot water, and that on plats Nos. 4, 5, and 6 was thoroughly dusted with copper carbonate. On plat No. 1, which previously had been planted with peas, the barley had large, well-filled heads, grew to a height of 48 inches, and yielded 303 pounds, or at the rate of 18.9 bushels of grain per acre. On plat No. 2, on which red clover had been plowed under, the barley yielded 172 pounds, or at the rate of 10.7 bushels of grain per acre. Plat No. 3, from which peas had been harvested for seed, yielded 193 pounds, or at the rate of 12.06 bushels of grain per acre. Plat No. 4, on which red clover had been plowed under, yielded 113 pounds, or at the rate of 7.1 bushels of grain per acre. Plat No. 5, on which spring vetch had been plowed under, yielded 165 pounds, or at the rate of 10.3 bushels of grain per acre. Plat No. 6 yielded 37 pounds, or at the rate of 2.3 bushels of grain per acre. It is fairly evident that grain following red clover yields less than when it follows vetch or peas, provided the rainfall is deficient in one or both years. The soil of plats Nos. 2, 4, and 6, on which the clover was plowed under in September, 1923, was much drier than that of the adjoining plats of vetch and peas.

Hybrid barley No. 19 was sown May 24 on seven $\frac{1}{18}$-acre plats in an experiment on smut control. As was the case on the ⅓-acre plats, the seed given the hot-water treatment showed considerable loss of vitality, and the stand was lower than those of the other plats notwithstanding an increase in the rate of seeding. Formaldehyde also resulted in a lessened viability, a slightly less vigorous growth, and slower ripening of the grain. The seven plats yielded 506 pounds, or at the rate of 26.02 bushels of grain, per acre. Table 5 gives the results of the test.

TABLE 5.—*Result of treating barley for smut control at the Fairbanks station*

Plat No.	Treatment	Total heads per square rod	Smutted heads per square rod	Clean heads per square rod	Proportion of smut
					Per cent
356	Check (no treatment)	3,748	391	3,357	10.43
357	Hot water (immersed for 10 minutes at 129° F.)	3,587	159	3,428	4.43
358	Copper carbonate (3 ounces per bushel)	3,850	81	3,769	2.10
359	640–S (6 ounces per bushel)	4,066	371	3,695	9.12
360	Uspulun (soaked for 1 hour)	2,771	64	2,707	2.31
362	Formaldehyde	2,695	219	2,476	8.13
1, 2, 3	Hot water (immersed for 10 minutes at 129° F.)	2,672	91	2,581	3.41
4, 5, 6	Copper carbonate	3,132	184	2,948	5.87

Comparative plantings of barley were made May 17 for observation on earliness and type and character of head. Table 6 gives the results of the test.

TABLE 6.—*Effect of time of planting on maturity of barley at the Fairbanks station*

Variety	Date harvested	Proportion ripe	Remarks
		Per cent	
Boehme	Aug. 10	98	6-rowed; hooded, hull-less.
Hull-less	do	98	Do.
Pamir	Aug. 1	95	6-rowed; bearded.
North Dakota hybrid	Aug. 10	95	Do.
Hansen	do	95	Do.
Lapland	Aug. 14	95	Do.
Hybrid No. 20	Aug. 10	95	6-rowed; hooded.
North Dakota hybrid	do	95	6-rowed; hooded, hull-less.
Hybrid No. 14	do	95	2-rowed; hooded.
Hybrid No. 19	do	95	6-rowed; hooded, hull-less.
Hybrid No. 28	do	95	6-rowed; hooded, hull-less.
Hybrid No. 68	do	95	6-rowed; smooth, hull-less.
Hybrid No. 66	do	95	6-rowed; hooded.
Smyrna	do	90	2-rowed; bearded.
Gatami	Aug. 11	90	6-rowed; bearded.
North Dakota hybrid No. 555	do	90	Do.
North Dakota hybrid No. 551	Aug. 12	90	Do.
Minnesota Pedigree	Aug. 14	90	Do.
Old's Montana	do	90	6-rowed; hooded, hull-less.
Eagle	do	90	2-rowed; bearded.
Hybrid No. 14	Aug. 10	90	6-rowed; bearded, hull-less.
Hybrid No. 17	do	90	6-rowed; hooded.
Piechora	do	90	6-rowed; bearded.
Abyssinian	do	90	2-rowed; bearded.
Yakutsk	do	85	6-rowed; bearded.
Manchuria	Aug. 14	80	6-rowed; bearded.
Alfa	Aug. 10	80	6-rowed; hooded, hull-less.
Hybrid No. 28	Aug. 14	75	6-rowed; bearded.
Meloy	do	25	6-rowed; hooded.
Abyssinian	do	25	6-rowed; bearded.
North Dakota hybrid No. 550	do	15	Do.

Wheat

One-third-acre plats Nos. 7, 8, 9, 10, 11, and 12 were seeded with Siberian No. 1 wheat May 14. The seed germinated promptly, and the resulting stand was 90 per cent uniform. Having previously been planted with other crops, however, the different plats exhibited considerable variation in seasonable growth. The wheat was ripe and harvested August 13. The straw on the poorest plats was too short to harvest with the binder, and as a result there was some loss in the field and in subsequent handling. Rabbits, too, caused loss by damaging some of all the crops. Plat No. 7, on which woolly vetch had been plowed under, yielded 79 pounds, or at the rate of 4 bushels of grain per acre. Plat No. 8, on which red clover had been plowed under, yielded 82 pounds, or at the rate of 4.1 bushels of grain per acre. Plat No. 9, on which hairy vetch had been grown for seed, yielded 81 pounds, or at the rate of 4.05 bushels of grain per acre. Plat No. 10, on which red clover had been plowed under, yielded 122 pounds, or at the rate of 6.1 bushels of grain per acre. Plat No. 11, on which purple vetch was grown for seed, yielded 227 pounds, or at the rate of 11.3 bushels of grain per acre. Plat No. 12, on which red clover had been plowed under, yielded 129 pounds, or at the rate of 6.4 bushels of grain per acre. A comparison of the yields of plats Nos. 7, 9, and 11 with those of plats Nos. 8, 10, and 12 shows that the vetch plats outyielded the red-clover plats by 54 pounds. It is very likely that the clover drew too heavily upon the soil moisture in 1923 when the annual precipitation was 2.22 inches below normal. The precipitation for 1924 was normal, but the normal amount (average of 14 years) for the five summer months is only 7.42 inches, which is scarcely adequate for a crop having in the aggregate such a large leaf surface as has a field of clover. When the plats were fall-plowed in 1923 it was very apparent that the clover plats were drier than were the vetch or pea plats. Similar deductions were drawn from tests made with red clover in 1920.

Six $\frac{1}{18}$-acre plats, on which potatoes were grown last year, yielded in 1924 at the rate of 19 bushels of Siberian No. 1 wheat per acre. The seed, except that on the check plat, was treated with various chemicals for smut control and sown May 24. The crop was ripe and harvested August 22, but smut failed to develop in the check plat, thus rendering the test for smut control valueless.

Land adjoining the above-mentioned area was seeded May 24 with Hybrid No. 30 wheat, which made a good stand, and fairly vigorous growth, and yielded at the rate of 16.5 bushels of grain per acre. Many of the heads had sterile tips, indicating wheat-scab infection due to the fungus *Gibberella saubinetii*.

Forty-seven varieties of wheat were sown May 15 in two drill rows each 1 rod long for observation on germination, vigor, disease resistance, lodging, date of ripening, and yield as indicated by tillering, size of heads, and kernels per head. Seeding was finished May 17. A light crop of red clover had been grown on the land and plowed under the year previous. Although the grain did not make strong growth, the heads were well filled. All crops were harvested at the same time because of threatened destruction by rabbits. Table 7 shows the length of time from planting to harvesting, the percentage of the crop ripe serving as an index of earliness.

TABLE 7.—*Variety test with wheat at Fairbanks station*

Variety	Date planted	Date harvested	Proportion ripe	Remarks
			Per cent	
H. G	May 16	Aug. 22	95	Bearded.
Gamma Lutescent	May 19	Aug. 14	95	Terminal bearded.
Gamma	do	Aug. 18	95	Do.
Romanow	May 15	Aug. 14	90	Bearded.
Irkutsk	do	Aug. 18	90	Do.
Hybrid No. 30	May 16	Aug. 22	90	Terminal bearded.
Omega	May 19	Aug. 14	90	Do.
Gamma Milturnum	do	do	90	Do.
Beta	May 15	do	80	Bearded.
Omega	do	do	80	Terminal bearded.
Do	do	do	80	Bearded.
Pioneer	do	Aug. 23	75	Do.
Prelude	do	do	75	Do.
Ulka	do	Aug. 22	75	Terminal bearded.
Red Bobs	do	Aug. 14	75	Bearded.
Hybrid No. 62	May 16	Aug. 18	75	Terminal bearded.
Siberian No. 1	do	do	75	Bearded.
Hybrid No. 100	May 17	Aug. 19	75	Smooth.
Delta	May 19	Aug. 14	75	Terminal bearded.
Ladoga	May 15	Aug. 23	70	Bearded.
Wisconsin Wonder	do	Aug. 14	50	Do.
Ruby	do	do	50	Smooth.
Romanow	do	do	50	Terminal bearded.
Red Bobs	do	Aug. 22	50	Smooth.
Champion	do	Aug. 23	50	Bearded.
Hybrid No. 30	do	do	50	Terminal bearded.
Hybrid No. 24	May 16	do	50	Bearded.
Hybrid No. 63	do	Aug. 18	50	Do.
Hybrid No. 64	do	do	50	Do.
Marquis	May 15	Aug. 22	25	Terminal bearded.
Wellman	do	do	25	Do.
Blue Ribbon	do	Aug. 23	25	Bearded.
Farley	May 16	do	25	Terminal bearded.
Hybrid No. 101	May 20	Aug. 15	25	Smooth.
Kitchener	May 16	Aug. 23	10	Terminal bearded.
Huston	do	do	10	Do.
Preston	do	do	5	Bearded.
Power	do	do	5	Terminal bearded.
Kota × Marquis	do	do	5	Bearded.
Hard Federation	May 15	do		Smooth.
White Federation	do	do		Do.
Federation	do	do		Do.
Converse	May 16	do		Bearded.
Haynes Bluestem	do	do		Terminal bearded
Glyndon	do	do		Do.
Red Fife	do	do		Do.
Kota	do	do		Bearded.

GERMINATION TESTS OF IMMATURE GRAIN

In a test made to learn how soon after blooming grain can be depended upon to mature, series of heads of oats, wheat, and barley in as nearly the same stage of development as possible were selected for study, two heads of each series being cut and tagged at intervals of 5 days. It was found that wheat, barley, and oats can be cut for seed 20 days after blooming, that is, 10 days before maturity, and that they will give a high rate of germination provided the grain is properly cured. This fact may have considerable economic weight in years when the season is backward and the grain fails to ripen in time to escape fall frost. Table 8 shows the percentage of heads germinating within 5 to 42 days after blooming.

TABLE 8.—*Proportion of grain ripening in 5 to 42 days after blooming, at Fairbanks station*

Crop	Time after blooming	Rag-doll test; germinated	Tested in earth in flat; germinated	Crop	Time after blooming	Rag-doll test; germinated	Tested in earth in flat; germinated
	Days	*Per cent*	*Per cent*		*Days*	*Per cent*	*Per cent*
Oats	5	16	25	Wheat—Continued	32	100	97
	10	66	87		37	100	100
	15	83	91		42	100	100
	20	92	92	Barley	5		
	25	100	95		10	96	95
	30	100	93		15	96	94
Wheat	7				20	98	90
	12	79	48		25	98	88
	17	91	96		30	100	94
	22	94	95		35	100	98
	27	97	95				

LEGUMES

Alfalfa.—The remainder of the field, part of which was sown in alfalfa in 1922 and part in 1923, was seeded with alfalfa (*Medicago falcata*) during the year, making a total of 4 acres in the crop. Alfalfa which was sown in the field in 1922 and 1923 wintered well, but continues to make weak growth owing to the poor soil. Rabbits left the field without a vestige of growth. It remains to be seen how the alfalfa stands such drastic cropping.

Clover.—Red clover was sown on 1½ acres of south slope land May 13. The crop made a good stand but grew slowly until July, when it began to grow rapidly, attaining a height of 1½ feet by the end of August. Rabbits devastated the field, leaving scarcely a leaf.

Vetch.—Common spring vetch (*Vicia sativa*) and purple vetch (*V. purpurea*) were each sown on an acre strip May 13, producing an excellent stand but not a vigorous growth. Of the two crops, the common vetch showed less resistance to drought, and neither crop was satisfactory as a stock feed because of the light yield. Some of each variety was cut for seed, which, however, was not fully ripe August 20. The purple vetch podded freely and made a thick, leafy mat with short, fine stalks. The common vetch grew upright to a height of 12 inches and produced leaves sparingly on a rather coarse stalk.

Peas.—Alaska peas were sown May 12 on 5 acres of land in rows spaced 32 inches apart. The crop was up June 24, showing a full stand, and was cultivated with a two-horse cultivator. The vines were 12 inches high and beginning to bloom June 21. Harvesting was begun August 14, the crop yielding 773 pounds of peas, which was light compared with the 1,130 pounds obtained per acre in 1923. Two acres were harvested at a labor cost for production of $16 each.

POTATOES

Potatoes were planted May 22, on south slope land, part of which was fertilized with barnyard manure to determine its effect on yield and quality. A scabby crop was had as the result of planting on the manured land, whereas a clean crop was produced on the unmanured land. Potatoes had not been grown on the land for five years and all seed was treated with a formaldehyde solution prior to planting. It is therefore concluded that manure is highly conducive to the

development of scab. The main crops tested included Ohio Junior, with a production of 196 bushels per acre; Norway, 167 bushels; Eureka, 165 bushels; Early Ohio, 147 bushels; Alaska Beauty, 144 bushels; and Early Market, 119 bushels.

A few hills each of 29 varieties of seedlings originating at the Sitka station were grown during the year. Of these, the 10 best yielding varieties were Imogen, 261 pounds from 10 pounds planted; Jean, 242 pounds from 22 pounds; June, 210 pounds from 17 pounds; Alida, 147 pounds from 11 pounds; Judith, 106 pounds from 9 pounds; Eileen, 103 pounds from 10 pounds; Amanda, 98 pounds from 9 pounds; Ida, 98 pounds from 7 pounds; Alice, 85 pounds from 8 pounds; and Bertha, 52 pounds from 5 pounds.

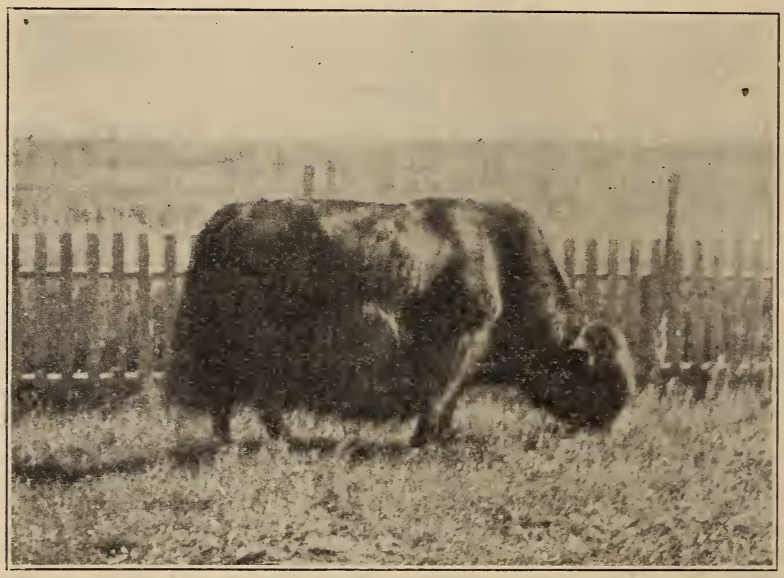

FIG. 5.—Yak bull, Fairbanks station

LIVESTOCK

The livestock of the station consists of 3 work horses (mares), the youngest 11 years old, 1 boar and 2 brood sows, all registered Hampshires, 1 Galloway cow 5 years old, 1 Galloway heifer 2 years old, 1 Galloway bull 4 years old, 1 Shorthorn bull, 1 polled yak bull (fig. 5), 1 horned yak bull 2 years old, 1 horned yak cow, 1 yak heifer 1 year old, 3 calves sired by the yak bull out of Galloway cows, and 1 Toggenburg grade doe.

On the morning of June 6, Fidelia Queen, a Galloway cow, was found dead in her stall. An autopsy failed to reveal the cause of her death, nor did an analysis of the contents of the digestive tract. Her calf, which was 27 days old at the time of the death of the mother, is the first hybrid resulting from the yak-Galloway cross (fig. 6). At the time of birth, which was normal in all respects, there was little to differentiate the calf from a full-blooded Galloway. The calf has the guttural grunt of the yak, however, rather than the prolonged bawl commonly heard. As the hybrid grew its tail became brushy, the hair on its belly grew shaggy, and the excrement resembled that of

the yak. Two other hybrids, which are several months younger, had coal-black curly hair at birth. The hair of one has turned brownish in color and rather woolly. Both hybrids grunt when hungry.

The milk record for Fidelia Douglas Best, register No. 48150, a Galloway cow, was 3,749 pounds, or on the average 13.63 pounds per day, for her first lactation period of 275 days. One test showed a yield of 5.97 per cent butterfat. Her record for the first 27 days after calving was 552 pounds, or an average of 20.4 pounds per day.

Both brood sows farrowed, having 12 and 7 pigs, respectively, of which 9 sows and 5 boars were raised (fig. 7). On September 6 one lot of 9 pigs was placed in a portable pen and fed for a period of 23 days on a ration of peas, receiving nothing else except fresh water. At the beginning of the test the pigs had an average weight of 55.1 pounds. They made an average daily gain of 0.98 pound, and at the

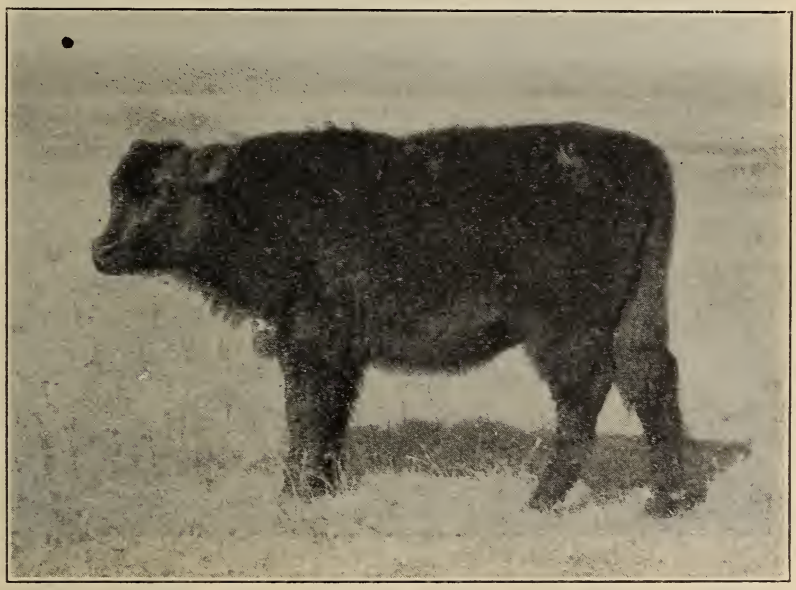

FIG. 6.—Crossbred heifer; sire, yak; dam, Galloway. First yak-Galloway cross known

conclusion of the test weighed 77.5 pounds. Had not rabbits eaten many of the peas, it is likely that the pigs would have made an average daily gain of over a pound. There being no call for breeding stock, all pigs were slaughtered and sold to the local market at the prevailing price of 25 cents per pound. This pea-fed pork was pronounced the best of any received by the local market.

RAMPART STATION

As was the case at some of the other stations, the weather was unfavorable at Rampart during the summer of 1924. Early in the summer a drought retarded vegetation and caused grain crops to be short in straw, and during the latter part of the season all crops suffered from excessive rain, including hardy Siberian alfalfa, perennial vetch (*Vicia cracca*), Finnish Black and Hybrid No. 51 oats, Siberian No. 1 wheat, and Hybrid No. 19 barley. The alfalfa did not mature

seed and the vetch was so stunted by the drought that when it finally started to grow after the rains came, the season was too late to permit of its maturing seed. Only light yields were obtained from wheat, barley, and oats, on account of rabbit destruction as well as drought. Peas seeded on 3 acres of land were so dwarfed that they had to be plowed under for green manure. *Dalea alopecuroides*, an annual legume which has proved to be an efficient soil builder in Iowa, particularly because it will grow on sour soil, was dwarfed by the drought in the early part of the summer and killed to the ground by a slight frost occurring August 14. This newly-tried legume was likewise a failure at Fairbanks and at Matanuska. Petrowski turnips sown on half an acre for seed production in 1925 did fairly well, and yielded 90 bushels of choice, uniform roots. From roots grown in

FIG. 7.—Hampshire sow and litter, Fairbanks station

1923, Petrowski turnips yielded 200 pounds of seed in 1924. Petrowski is the most valuable turnip that has been introduced into Alaska, and does well wherever it is tried. The stations alone apparently produce the seed, which is distributed free of charge to some 3,000 settlers. Only a small patch of potatoes was planted and all did well. Irish Cobbler is still the standard variety for the region. Twenty hills each of 50 of the Sitka seedlings were grown, but many of them, failing to come up to the standard of Irish Cobbler, will be discarded. Seedlings worthy of further trial include Abbie, Alice, Amanda, Edith, Edina, Etta, Effie, Elmira, Imogen, Jean, Jessie, Josephine, Judith, and June. Even the hybrid Sitka strawberries suffered from the drought and were partly destroyed by rabbits. Later, when the rains came, the plants started to grow and the runners took root. These will be transplanted to the Fairbanks and Matanuska stations.

GENERAL WORK

The general work of the year included rebuilding fences where posts had rotted; building a log bridge 300 feet long by 14 feet wide over a gully; and improving the approach to the river by cribbing and filling in with gravel. Early in the spring the woodwork of all the station implements was painted, and all machinery was put in condition for use. Some slight repairs were made to the buildings.

KODIAK STATION

The leading project under experiment at the Kodiak station is cattle breeding. This work was begun in 1907 and has continued with few changes until the present time. Kodiak Island, the islands skirting the mainland, and the Alaska peninsula are not suited to general farming. The summers are cool and the fall rains heavy, so that it is only in exceptional seasons that grain can be matured. During such seasons some barley and oats can be grown to maturity. The entire region is covered with grasses, which should be, and in time will be, put to economic use in the feeding of livestock. Hardy cattle and sheep do well at Kodiak, as has been demonstrated by the station. The Galloway breed was selected for the region, because for nearly three centuries it has been bred under conditions similar to those obtaining in southwestern Alaska. The dominating idea in introducing the Galloways was to aid in the development of the country by furnishing breeding stock to settlers and ranchers desiring to utilize the rich grasslands. The country has developed slowly, however, and there has been practically no demand for breeding stock. On the other hand, there is a strong demand for hardy milkers for family use. It was therefore decided to develop such a breed by making reciprocal crosses between the Holstein-Friesians and the Galloways. During the season of 1924 seven of the crossbred females were in milk. The crossbreds are hornless and black like the Galloways, but lack the heavy coat of the latter. Like the Holsteins they have a sleek coat of short hair, and are not for that reason as well adapted to the rigorous climate as are the purebred Galloways. However, the crossbred animals face cold rainy storms and follow the Galloways, whereas the purebred Holsteins do not range in stormy weather, but gradually work their way to shelter. In December, 1924, there were 41 head of cattle of both sexes and all ages at the station.

ADAPTATION OF THE LAND TO FEED PRODUCTION

The cost of maintaining the Kodiak station has been relatively large, on account of difficulty in obtaining winter feed for the herd. There are not more than 12 or 15 acres of cleared land on which feed can be grown. Hay and silage for winter feed must be gathered from the beaches and small natural meadows for miles along the coast, requiring transportation to these places of teams, mowing machinery, and a crew of men for cutting and hauling. Finally, the hay or green grass, as the case may be, must be loaded on a scow and towed to Kodiak, whence it is hauled to the silo or the haymow of the station. This is rather expensive and slow work, but is cheaper in the long run than transporting baled hay from Seattle. It has been demonstrated by the station that the native grasses, both in the form

of hay and in the form of silage, are adapted to livestock feeding, and there is every reason to believe that when the country is settled, a process which is going on slowly and gradually, there will be nutritious vegetation in abundance for livestock raising.

The small area that has been cleared at the station is utilized for the production of stock feed, consisting chiefly of oats grown in combination with vetch and peas. This combination produces excellent fodder for the winter. Were 30 or 40 more acres cleared immediately and cropped for feed, the expense of maintaining the station would be greatly reduced.

HAY AND SILAGE MAKING

The best time to cut the native grasses for hay is during the heading period. Several species of Calamagrostis are indigenous to this region, and make excellent hay if cut early If the crop is cut late, however, the leaves will have withered, the stems developed a woody fiber, and the panicle attained a height of 4 to 6 feet, in which stage the grass is not fit for haymaking. Settlers very generally make the mistake of waiting until too late before starting to make hay from these grasses. Native beach grass (*Elymus mollis*), locally known as wheat grass and rye grass, grows along all the sandy beaches of southeastern and southwestern Alaska. It is a coarse grass having thick leaves and stems and does not cure readily, but these same properties make it an excellent silage material. Several species of sedges are found growing in swampy places and inlets along the beaches. The most important of these is *Carex cryptocarpa*, which attains a height of 2 feet in places and yields a heavy crop. It makes an excellent silage, especially when mixed with beach grass. In the summer of 1924, 63 tons of native hay, chiefly *Calamagrostis* spp., was put up by the station, and 185 tons of silage was cut, hauled, and run through the cutter. Oats also were grown and largely fed green although some was cured for hay.

GRAIN FEED

Grain does not mature at Kodiak and must be shipped in from Seattle for winter feed. Ten tons is required to supply the needs of the station herd and the team for the winter.

The prospective settler should study the adaptation of his land to haymaking and the production of silage, and he should be informed as to the quantity of grain feed his stock will require and the cost of laying it down at his place.

ARTICHOKES

Four bushels of Mammoth White French Jerusalem artichokes were planted on a hillside having a southern exposure for use as a source of feed but did not do well. The stems attained a height of 3 to 4 feet and the crop was light. The soil, however, was poor, consisting mostly of volcanic ash from Katmai volcano mixed with such portions of the original black soil as could be thrown up by deep plowing. Applying a light top-dressing of sodium nitrate to the crop did not materially increase growth. The crop will be tested in another place having better soil. It is thought that if the soil is well fertilized the plant can be used for silage material to better advantage than almost any other crop. At the Sitka station the stems attained

a height of 7 to 8 feet and produced abundant leafage. The stems were fed to the station horse, which seemed to prefer them to other green feed. If this crop can be made a success it will materially aid in solving the problem of providing silage for winter feed.

CATTLE

The cattle at the station now number 2 herd bulls (fig. 8), 5 cows, and 2 bull calves, all Galloways; 1 herd bull (fig. 9), 3 cows, and 4 heifer calves, Holstein-Friesians; and 1 herd bull (fig. 10), 7 cows, 7 heifers, 5 heifer calves, and 3 bull calves, Galloway-Holstein-Friesian crosses (figs. 11 to 18). Two losses occurred during the year. One purebred Holstein-Friesian cow, 8 years old, swallowed baling wire which perforated the stomach wall and entered the right lung and the body wall. The cow gradually became very emaciated and was slaughtered when the cause of the trouble was discovered. A

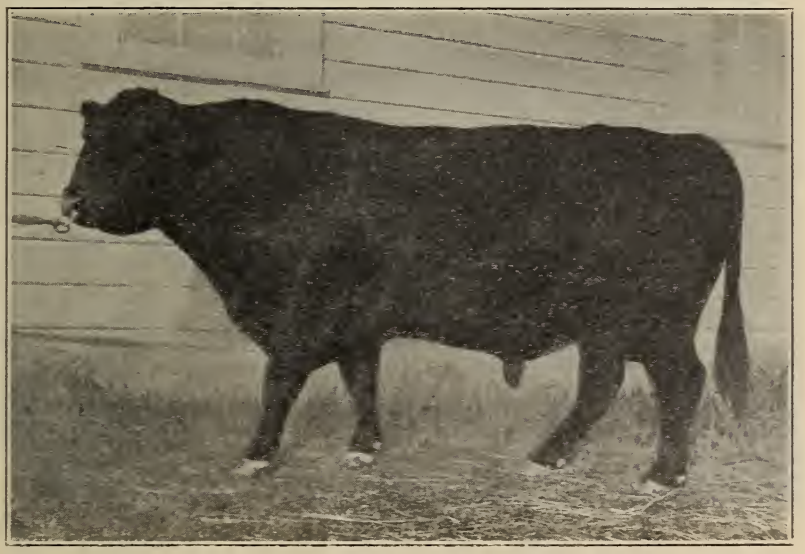

FIG. 8.—Galloway herd bull, Ranger of Seven Oaks

9-year-old purebred registered Galloway, apparently in perfect health when she left the barnyard, was found dead an hour later. Post-mortem examination failed to reveal the cause of her death.

The cattle are fed a ration consisting of grass only from June 1 to October 31, and an average of 30 pounds of silage and 10 pounds of native hay per 1,000 pounds of live weight, in addition to pasture pickings, from November 1 to May 31. The cows in milk are fed 2 to 5 pounds each daily of concentrated grains consisting of a mixture of equal parts of rolled barley and crushed oats.

All calves are raised by hand on milk supplemented with calf feed, depending upon the season. As soon as they are old enough to shift for themselves they are turned into the pasture and driven morning and night for their milk feed.

The young cattle and the herd bulls are fed silage and hay in addition to what they rustle for themselves. They are not confined to

the barn except during stormy weather. The herd bulls are given 1 to 3 pounds daily of rolled barley and crushed oats in times of service or in special cases.

Dairy Qualities of the Crossbred Cattle

The station has as yet only first-generation crosses in milk. It is hoped that some of the second, third, and succeeding generations will show milking qualities tracing back to their Holstein ancestry. It is too soon as yet to base judgment on the performance of the first-generation animals (figs. 19–22). They are not heavy milkers, but compare favorably with the average family cow. The animals were fed merely a maintenance ration, supplemented in winter with a little grain. Crossbred cow No. 1 yielded an average of 4,490 pounds of milk during each of her first, second, and third lactation periods, at the age of 3, 4, and 5 years, respectively. Crossbred cow No. 3 gave

Fig. 9.—Holstein herd bull, Shadford Segis Hartog 2nd

an average of 5,092 pounds of milk per lactation period during her second, third, and fourth periods, at the age of 3, 4, and 5 years, respectively. A comparison of these figures with those of the pure-bred Galloways shows that Galloway cow No. 19 produced an average of 2,538 pounds of milk during each of her second, third, and fourth lactation periods at the age of 5, 6, and 7 years, respectively. The average milk production of Galloway cow No. 215 was 3,741 pounds during her fourth and fifth lactation periods, at 7 and 8 years of age. The two Galloway cows averaged 3,139 pounds each during the five lactation periods. The two crossbred cows averaged 4,291 pounds per period for six lactation periods. Of the Holstein-Friesians, Holstein cow No. 3 produced 7,366 pounds of milk during each of her third and fourth lactation periods at the age of 5 and 6 years, respectively. Holstein cow No. 6 averaged 5,396 pounds of milk during each of four lactation periods, at the age of 3, 4, 5, and 6 years, respectively. The average of the two Holsteins was 6,381 pounds of milk during each of the six periods.

These figures are very low, especially for the Holsteins; but all the cattle were fed only a maintenance ration and no effort was made to increase the milk flow. The animals were bred and handled under average farm conditions. Moreover, the climate is rather harsh for the Holsteins, which, even if pampered and forced with feed, could not be expected to compare in milk yields with the same breed in the States.

Table 9 gives the milk yield per month of the crossbred animals for the year ended December 31, 1924.

FIG. 10.—Crossbred bull. No. 33; sire, Holstein; dam, Galloway, Mollie 8th of Kodiak

TABLE 9.—*Comparison of milk yield for one year of crossbred cows at the Kodiak station*

Month	Milk yield of cows—				
	3 H-G [1]	5 G-H [2]	14 G-H [2]	18 H-G [1]	21 H-G [1]
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
January	413.1	464.9	322.2	386.6	526.8
February	443.4	444.8	275.2	412.6	517.3
March	379.4	365.4	248.8	367.4	442.3
April	304.2	290.5	218.0	326.0	367.9
May	342.2	404.9	265.9	296.3	445.0
June	536.8	623.8	410.0	509.8	632.1
July	476.7	676.1	418.0	587.8	637.9
August	45.7	546.8	112.8	508.0	510.6
September	249.2	349.4	----------	341.9	331.1
October	781.8	326.7	780.5	363.7	348.9
November	688.5	251.7	655.5	299.8	313.4
December	653.3	99.0	562.4	259.8	310.1
Total yield	5,314.3	4,844.0	4,269.3	4,659.7	5,383.4

[1] Sired by Holstein bull out of Galloway cow. [2] Sired by Galloway bull out of Holstein cow.

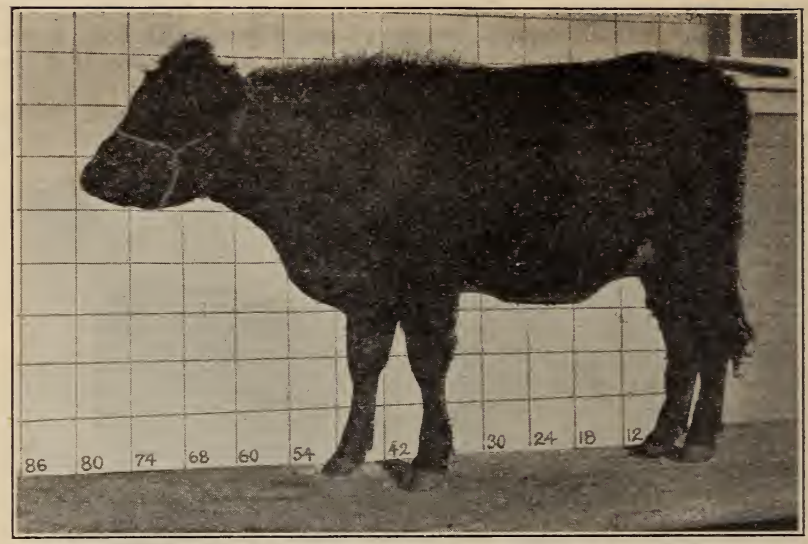

FIG. 11.—Crossbred heifer, No. 30; sire, Galloway (fig. 8); dam, Holstein, Miss Gladys Cornucopia

FIG. 12.—Crossbred heifer, No. 39; sire, Holstein; dam, Galloway

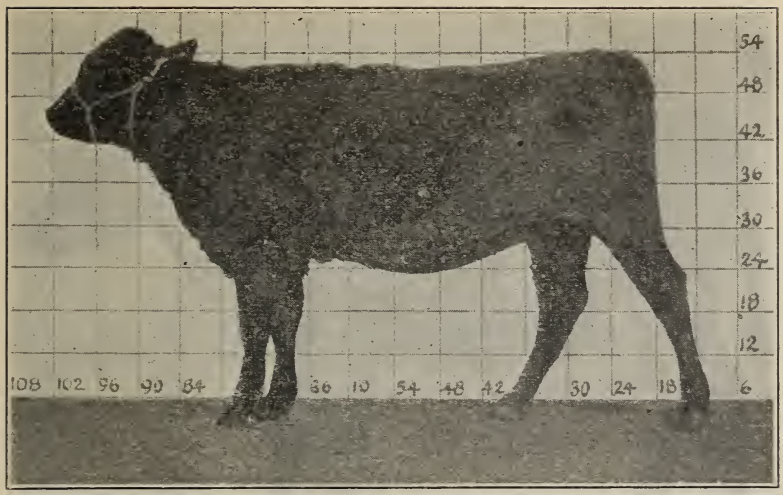

FIG. 13.—Crossbred heifer, No. 28; sire, Holstein; dam, Galloway, Fidelia 6th of Kodiak

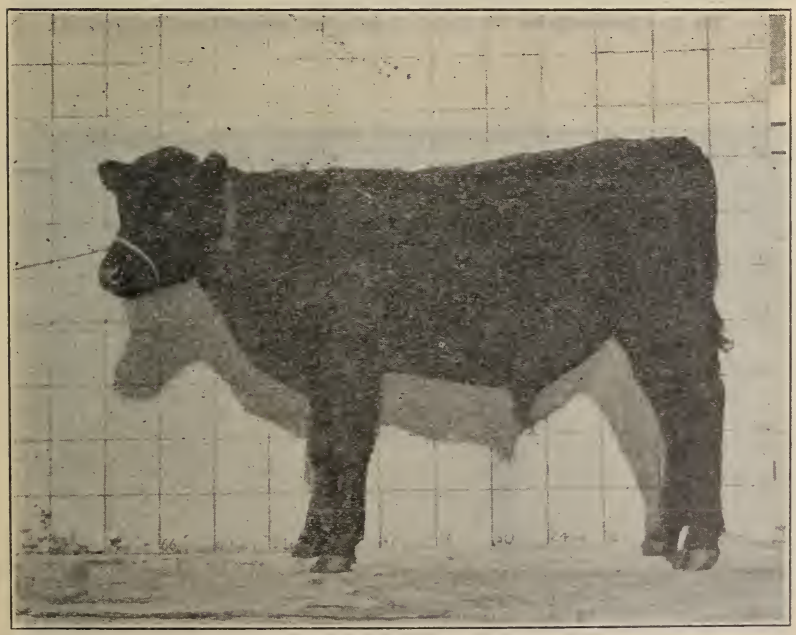

FIG. 14.—Crossbred bull calf, No. 37; sire, Holstein; dam, crossbred cow, No. 1 (Holstein-Galloway)

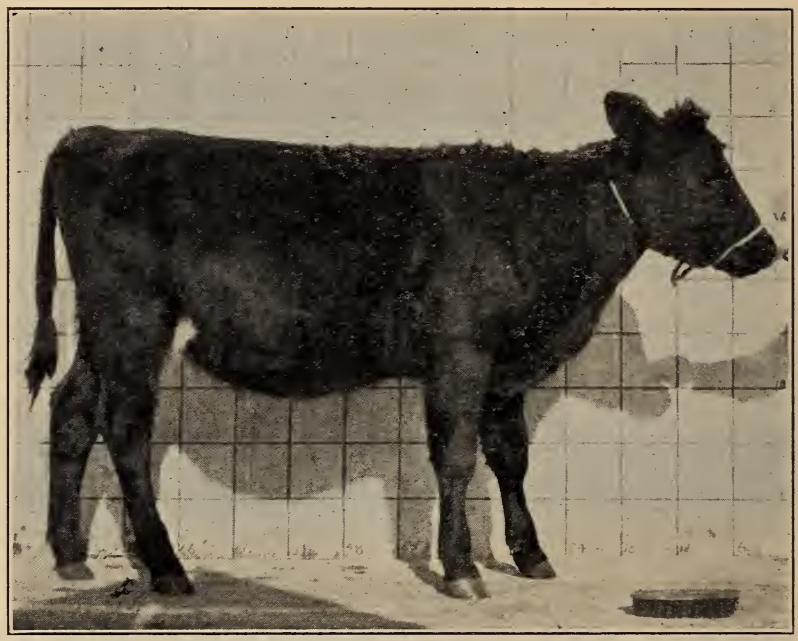

FIG. 15.—Crossbred heifer, No. 34; sire, Holstein; dam, crossbred cow, No. 18 (fig. 21)

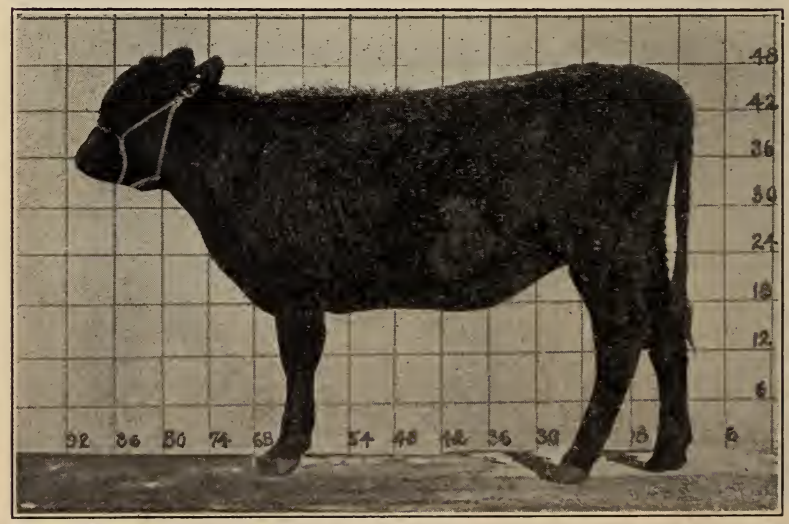

FIG. 16.—Crossbred heifer (2nd generation), No. 32; sire, crossbred bull, No. 33 (fig. 10); dam, crossbred cow, No. 14 (fig. 20)

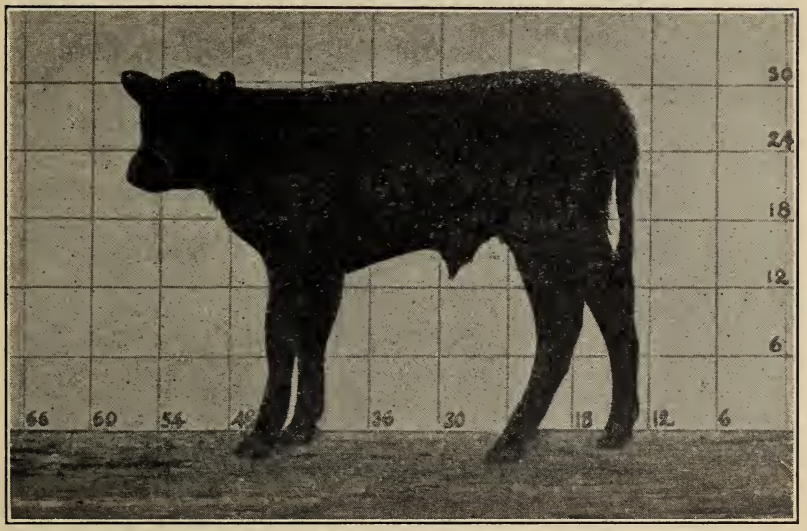

FIG. 17.—Crossbred bull calf (2nd generation); sire, crossbred bull, No. 33; dam, crossbred cow, No. 14 (fig. 20)

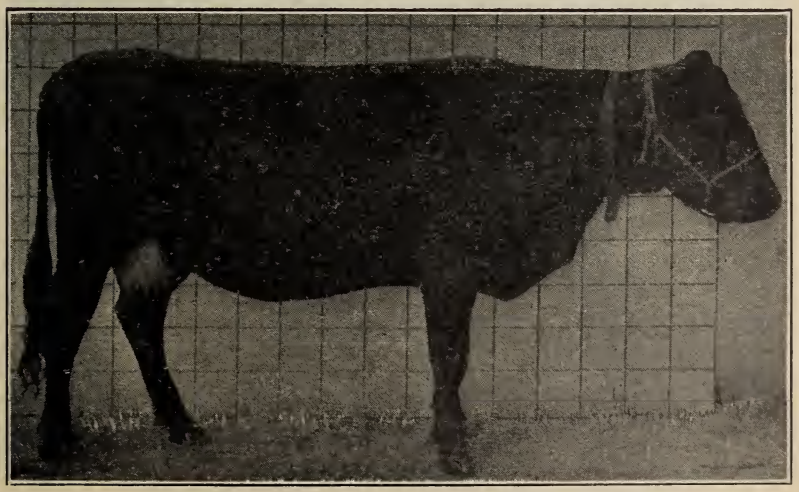

FIG. 18.—Crossbred cow, No. 3; sire, Holstein; dam, Galloway cow, Fidelia 4th of Kodiak

FIG. 19.—Crossbred cow, No 5; sire, Galloway; dam, Holstein

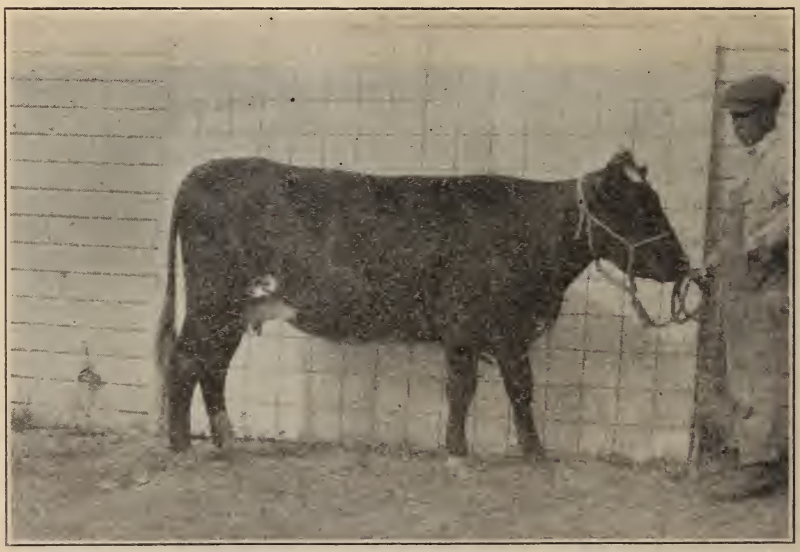

FIG. 20.—Crossbred cow, No. 14; sire, Galloway; dam, Holstein

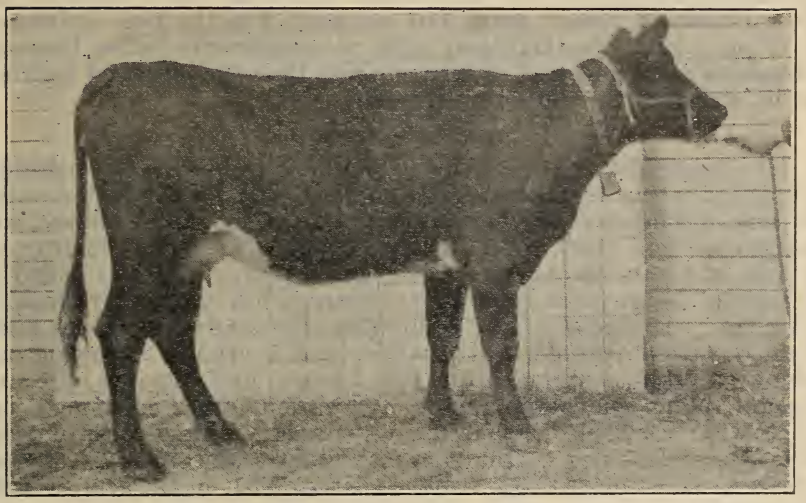

FIG. 21.—Crossbred cow, No. 18; sire, Holstein; dam, Galloway

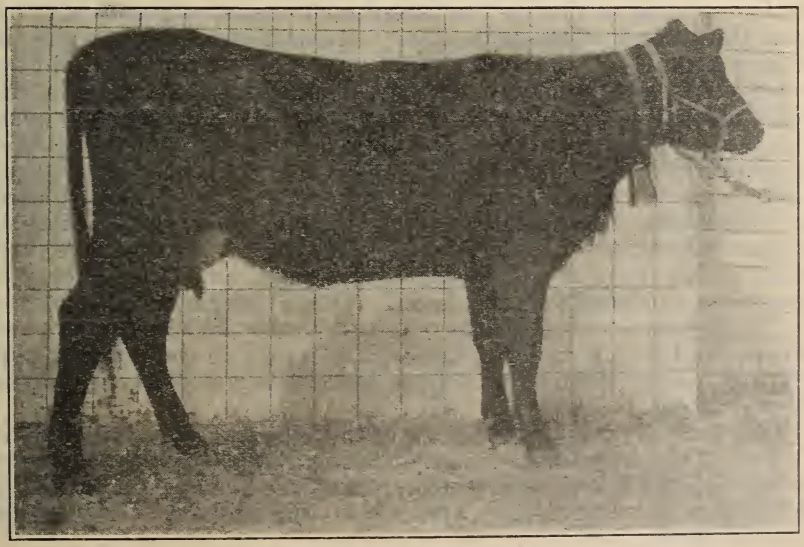

FIG. 22.—Crossbred cow, No. 21; sire, Holstein; dam, Galloway, Bertha A

Butterfat Yields

Tests were made bimonthly of each cow of the two breeds and of the crossbreeds to learn their yields of butterfat. The crossbred cows produced during the year an average of 3.8 per cent butterfat, the four Holstein-Friesian cows, 3.07 per cent, and the five Galloways, 5.27 per cent. The Galloway milk is considerably richer than the crossbred milk, and that in turn is richer than the purebred Holstein milk, although the difference is small.

GENERAL WORK

The frame and roof of a 20 by 40 foot open-front shed for sheltering implements was begun during the summer, but not completed owing to lack of funds for carrying on the work. A silo, 12 by 30 feet, was completed and painted; 2 cement water tanks were constructed; 1 mile of 4-wire fence was erected, and a fourth wire was added to 3 miles of 3-wire fence inclosing a pasture; a heavy plow for breaking new land was added to the equipment; the station scow was overhauled, calked, painted, and repaired; and 2 wagons, 2 mowing machines, 2 rakes, a silage cutter, disk harrow, drill, manure spreader, tractor, pump and pump engine, and various other machinery and tools were overhauled, repaired, and painted. Thirty cords of wood was cut and hauled to the station buildings and 10 acres of land cleared, the stumps being removed either with picric acid or with the tractor.

AGRICULTURAL SURVEY AND COOPERATIVE WORK

The stations have almost completed the somewhat extensive work of visiting and examining every homestead in Alaska which could be reached without too great expenditure of time and effort. The section, quarter section, or fraction of each homestead was ascertained from the records of the land office. Records were made of the size of each homestead, the area of land under cultivation, the kind and condition of the crops grown, the number and character of the buildings and of the livestock at each place, the homesteader's plans for future development, the character of the soil and the kind of crops to which it is adapted, and the nature of the clearing required. Arrangements were made with the more progressive farmers to carry on cooperative experiments in grain growing on a small scale, the station furnishing the seed for the purpose. Surveys have been made in the Tanana and Matanuska Valleys, along the railway to Seward, and in southeastern Alaska. The investigator was requested by the managers of the Alaska railway to learn the approximate area which could be put under cultivation tributary to the railway, some 200 miles along the line, to aid prospective homesteaders in making their locations.

This work covered three months of the year and was not completed because of the difficulties of transportation by water to the many more or less isolated homesteads which are scattered among the inlets and along bays in southeastern Alaska. It is planned to complete the work in 1926.

WEATHER REPORTS

A summary of meteorological data is submitted with this report, the figures of which are self-explanatory. A fairly good idea of the climatic conditions prevailing in various sections of the Territory can be obtained by a study of these data.

Condensed meteorological reports for 1924

AKULURAK. Latitude 62° 30′, longitude 164° 25′. Brother Murphy, S. J., observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	35	−30	7.1	−7.2	0.0			22	3	6
February	30	−34	8.4	−7.1	0.6			10	4	15
March	35	−14	23.4	10.1	16.8			1	6	24
April	39	−22	13.7	−4.3	4.7			10	11	8
May										
June	76	29	56.9	42.1	49.5			8	7	11
July	62	36	53.9	44.4	49.2			4	6	20
August	62	34	52.7	43.7	48.2			3	6	19
September	55	33	46.6	38.1	42.4			3	11	16
October	43	5	29.4	21.4	25.4			0	10	21
November	36	−5	25.5	15.1	20.3			2	4	24
December	35	−22	18.2	7.6	12.9			11	4	15

ALLAKAKET. Latitude 66° 34′, longitude 152° 44′. Florence Huband, observer

January	26	−57	−4.5	−25.1	−14.8	0.61	10	16	0	15
February	23	−64	−10.4	−33.2	−21.8	.32	6	19	0	10
March	37	−41	25.9	−1.9	12.0	.66	4	14	3	14
April	31	−40	17.1	−17.2	0.0	.47	5	15	5	10
May	73	−2	53.8	27.8	40.8	.59	7	18	5	8
June	85	29	70.0	41.2	55.6	.95	8	11	2	17
July	83	30	67.2	42.1	54.6	2.48	12	6	5	18
August	68	21	60.3	31.2	45.8			2	4	19
September	61	16	50.1	28.7	39.4	.71	11	5	4	2
October	45	−21	24.0	1.7	12.8	1.23	12	8	4	19
November	33	−32	13.8	−6.1	3.8	.80	12	5	7	18
December	17	−58	−12.3	−29.1	−20.7	.73	6	4	8	19

ANCHORAGE. Latitude 61° 13′, longitude 149° 52′. Weather Bureau, observer

January	42	−12	21.4	9.5	15.4	0.30	7	5	11	15
February	42	−10	25.4	11.1	18.2	.08	2	10	6	13
March	50	10	38.5	25.2	31.8	.21	4	6	10	15
April	54	−3	36.1	21.8	29.0	.57	10	6	5	19
May	66	28	54.8	37.7	46.2	.55	10	5	8	18
June	70	35	63.3	46.0	54.6	.50	5	13	8	9
July	72	39	64.5	48.6	56.6	.79	10	5	15	11
August	73	39	62.2	48.3	55.2	3.60	17	3	5	23
September	62	28	53.3	38.0	45.6	3.82	14	9	6	15
October	54	7	36.3	23.0	29.6	1.64	8	9	13	9
November	44	4	32.6	20.5	26.6	.21	4	12	6	12
December	30	−22	15.8	5.4	10.6	.49	4	12	5	4

ATKA. Latitude 52° 12′, longitude 174° 12′. R. W. Nye, observer

January	40	17	35.0	26.3	30.6	2.28	18	1	14	16
February	39	18	34.6	26.2	30.4	.73	10	1	13	15
March	44	23	37.7	30.0	33.8	4.26	25	1	12	18
April	46	24	38.6	30.0	34.3	4.02	16	2	9	19
May	51	26	43.6	34.7	39.2	2.18	13	0	12	21
June	56	35	48.6	41.4	45.0	3.87	9	0	8	22
July	59	41	53.0	44.4	48.7	1.69	9	0	17	14
August										
September	57	35	50.9	43.6	47.2	4.33	22	0	11	19
October	54	29	45.9	37.1	41.5	7.42	22	2	14	15
November	47	25	40.7	33.8	37.2	3.62	20	1	10	19
December	46	21	38.9	32.7	35.8	4.54	20	1	13	17

Condensed meteorological reports for 1924—Continued

BARROW. Latitude 71° 23′, longitude 156° 17′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	23	−42	−14.5	−26.9	−20.7	0.47	3	12	6	13
February	14	−56	−18.1	−35.7	−26.9	.07	2	11	11	7
March	10	−35	−2.0	−13.9	−8.0	.30	5	7	9	15
April	10	−42	−7.4	−24.8	−16.1	.11	2	14	11	5
May	33	−4	20.0	8.4	14.2	.26	6	1	8	22
June	45	14	35.7	26.0	30.8	.30	5	5	11	14
July	63	23	42.7	31.1	36.9	.95	11	1	11	19
August	61	26	41.0	29.7	35.4	1.45	17	2	10	19
September	34	6	27.7	20.0	23.8	.38	9	4	5	21
October	34	−19	10.2	−2.5	3.8	.14	6	2	8	21
November	34	−35	4.7	−9.9	−2.6	.97	9	7	10	13
December	31	−55	−1.5	−18.1	−9.8	.25	2	11	10	6

BETHEL. Latitude 60° 45′, longitude 161° 47′. Weather Bureau, observer

January	36	−38	9.4	−8.7	0.4	0.47	7	6	8	17
February	38	−34	10.7	−6.3	2.2	.26	5	1	7	21
March	43	−16	31.2	14.5	22.8	1.96	15	1	2	28
April	42	−25	21.4	−1.2	10.1	1.16	11	6	5	19
May	63	3	47.2	26.4	36.8	.58	5	2	17	12
June	82	31	63.4	44.1	53.8	2.25	15	9	3	18
July	77	38	60.0	45.5	52.8	6.14	22	2	9	20
August	66	32	58.3	44.2	51.2	8.93	27	11	5	15
September	69	29	52.3	38.7	45.5	7.44	27			
October	46	1	30.6	17.3	24.0	3.70	10			
November	42	−1	30.6	14.4	22.5	.15	3	18	3	9
December	46	−19	23.7	5.9	14.8	.17	6	17	4	10

CANDLE. Latitude 65° 55′, longitude 161° 57′. F. M. Warsing, observer

January	30	−46	−3.9	−20.7	−12.3			28	1	2
February	30	−48	0.2	−18.8	−9.3			20	5	0
March	33	−28	15.9	−.6	7.6			15	2	14
April	29	−36	3.9	−17.6	−6.8			28	2	0
May	52	−6	34.5	14.6	24.6			26	2	3
June	80	24	58.3	34.1	46.2			15	7	8
July	74	24	59.6	39.3	49.4			14	7	10
August	64	27	55.0	39.6	47.3			5	12	14
September	55	21	45.8	31.2	38.5			11	11	8
October	45	−11	24.3	9.5	16.9			17	5	9
November	36	−23	18.2	3.3	10.8			16	6	4
December	33	−45	7.1	−10.9	−1.9	0.11	2	24	5	0

CHICKALOON. Latitude 61° 48′, longitude 148° 27′. Archie Lingo, observer

January	34	−20	17.8	2.9	10.4	0.71	5	14	11	6
February	38	−8	24.0	10.5	17.2	.12	1	15	2	12
March	48	−1	38.0	16.5	27.2	.58	4	6	18	7
April										
May	72	24	57.3	34.5	45.9	.91	8	14	12	5
June	77	29	67.8	39.9	53.8	1.01	5	19	10	1
July	79	32	67.7	41.7	54.7	.95	7	10	14	7
August	75	31	62.7	43.3	53.0	3.39	18	6	16	9
September										
October										
November	45	−2	31.4	13.0	22.2	.20	3			
December	28					.16	3	14	6	8

Condensed meteorological reports for 1924—Continued

CORDOVA. Latitude 60° 32′, longitude 145° 42′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	41	−2	33.4	26.0	29.7	18.63	23	3	5	23
February	44	1	35.4	23.6	29.5	15.71	20	7	2	20
March	50	18	40.2	31.2	35.7	18.95	22	5	3	23
April	52	13	39.8	29.5	34.6	13.82	22	3	11	16
May	60	31	51.3	38.7	45.0	7.17	22	6	7	18
June	76	40	62.4	46.4	54.4	4.08	10	12	5	13
July	66	41	60.2	48.9	54.6	10.11	17	6	8	17
August	68	42	58.9	49.5	54.2	8.40	20	4	5	22
September	63	29	53.7	41.3	47.5	22.49	20	9	4	17
October	54	28	44.9	34.3	39.6	26.97	21	6	7	18
November	51	21	41.4	32.4	36.9	18.11	18	10	3	17
December	47	5	31.1	18.7	24.9	3.56	12	12	4	15

DILLINGHAM. Latitude 59° 00′, longitude 158° 28′. W. N. Reed, observer

January	48	−24	19.6	9.0	14.3	1.70	6	20	0	10
February	37	−11	19.3	7.9	13.6			23	0	6
March	41	12	34.7	26.4	30.6	1.59		6	3	22
April	41	−2	28.8	13.9	21.4	.82	5	7	4	19
May	61	19	47.0	33.5	40.2	3.24	7	3	10	18
June	76	32	61.7	44.4	53.0	2.53	7	7	6	17
July	79	38	60.3	46.1	53.2	3.04	15	5	0	26
August	69	35	59.4	45.5	52.4	5.85	13	2	6	23
September	59	30	53.9	40.6	47.2	5.84	17	2	3	25
October	51	8	37.1	22.9	30.0			10	4	17
November	49	3	37.4	24.4	30.9	1.20	8	12	1	17
December	39	−15	24.7	15.3	20.0	.53	3	8	0	23

DUTCH HARBOR. Latitude 53° 55′, longitude 166° 30′. Naval Radio Service, observer

January	43	15	34.3	27.3	30.8	5.15	8			
February	38	14	31.1	21.9	26.5	.95	4			
March	52	20	42.1	30.5	36.3	2.35	8			
April	55	20	40.9	29.4	35.2	6.32	8			
May	59	26	46.6	36.2	41.4	4.62	9			
June	67	35	55.6	43.0	49.3	3.42	11			
July	72	42	59.0	45.2	52.1	1.93	10			
August										
September										
October						5.17				
November	52	22	45.6	30.1	37.8	2.96				
December	46	18	40.9	30.9	35.9	8.63				

EAGLE. Latitude 64° 46′, longitude 141° 12′. Weather Bureau, observer

January	16	−65	−3.1	−16.6	−9.8	0.72	12	9	1	21
February	43	−51	1.1	−16.3	−7.6	.29	7	9	7	13
March	47	−30	32.2	5.7	19.0	.05	2	15	5	11
April	68	−33	30.5	1.6	16.0	.40	3	12	7	11
May	72	24	58.1	33.9	46.0	.46	8	6	8	17
June	82	32	68.8	43.1	56.0	1.56	13	7	5	18
July	84	32	69.7	45.4	57.6	2.17	14	5	8	18
August	83	23	64.8	41.0	52.9	1.67	16	8	4	19
September	60	10	50.0	30.8	40.4	.64	11	5	7	18
October	48	−3	26.1	12.7	19.4	1.07	10	7	2	22
November	43	−19	18.9	1.0	10.0	.80	9	8	4	18
December	14	−66	−8.5	−21.6	−15.0	.70	6	15	2	14

Condensed meteorological reports for 1924—Continued

FAIRBANKS. Latitude 64° 51′, longitude 147° 52′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	*Inches*				
January	25	−39	2.0	−15.2	−6.6	0.60	10	11	3	17
February	41	−42	3.4	−15.7	−6.2	.20	2	9	7	13
March	46	−16	34.4	12.4	23.4	.09	3	9	13	9
April	50	−23	27.0	2.6	14.8	.47	3	16	3	11
May	75	24	61.5	36.7	49.1	.32	6	8	10	13
June	83	35	71.1	43.9	57.5	1.53	10	8	6	16
July	84	34	68.9	45.5	57.2	2.32	14	9	5	17
August	80	27	64.6	43.3	54.0	2.32	13	6	7	18
September	66	20	54.1	33.8	44.0	1.38	8	7	6	17
October	48	−12	27.7	10.4	19.0	.82	9	10	5	16
November	37	−11	20.7	5.8	13.2	.42	8	8	5	17
December	20	−52	2.4	−14.3	−6.0	.85	7	18	5	8

FORTMAN HATCHERY. Latitude 55° 36′, longitude 131° 25′. Fred Patching, observer

January	45	9	37.1	28.6	32.8	19.22	24	1	2	28
February	45	16	40.4	30.9	35.6	19.37	25	2	5	22
March	58	15	47.5	31.0	39.2	7.62	20	7	4	20
April	70	25	48.4	32.6	40.5	11.41	26	1	7	22
May	82	31	60.3	40.6	50.4	8.92	18	6	9	16
June	82	36	71.2	46.1	58.6	.92	8	15	3	12
July	81	43	68.7	50.5	59.6	5.61	13	4	15	12
August	82	39	68.6	50.2	59.4	5.33	17	6	11	14
September	67	36	59.1	45.9	52.5	15.10	25	1	10	19
October	58	32	50.2	39.8	45.0	23.36	28	3	3	25
November	52	9	43.3	30.5	36.9	20.60	22	8	4	18
December	48	4	34.1	24.3	29.2	8.83	15	7	4	20

FORT YUKON. Latitude 66° 34′, longitude 145° 13′. Weather Bureau, observer

January	15	−58	−8.8	−20.5	−14.6	0.34	9	9	5	17
February	21	−59	−10.1	−30.7	−21.9	.60	2	13	10	6
March	41	−30	26.5	.4	13.4	.06	1	14	17	0
April	59	−31	22.4	−5.7	8.4	.00	0	16	10	4
May	70	18	54.0	30.2	42.1	T.	0	19	5	7
June	80	32	69.1	47.0	58.0	.19	2	10	13	7
July	88	38	69.5	48.8	59.2	.96	7	7	8	16
August	83	22	64.7	41.6	53.2	.94	8	17	8	6
September	56	12	47.3	27.8	37.6	.38	4	13	7	10
October	44	−20	21.2	6.1	13.6	1.87	8	6	2	23
November	34	−28	8.9	−6.0	1.4	.05	1	15	2	13
December	10	−55	−15.1	−31.5	−23.3	.20	1	23	1	7

HOLY CROSS. Latitude 62° 16′, longitude 159° 50′. Sister Mary Jean Bernard, observer

January	39	−42	9.2	−8.1	0.6	0.52	4	8	18	5
February	34	−33	8.1	7.1	7.6	.44	5	6	16	7
March	44	−8	33.0	15.6	24.3	.90	12	3	21	7
April	43	−23	21.6	.8	11.2	.57	6	12	11	7
May	70	11	54.7	32.1	43.4	.56	6	13	12	6
June	84	33	65.5	45.5	55.5	2.56	9	17	7	6
July	--------	35	--------	46.1	--------	4.07	19	4	9	18
August	--------	32	--------	44.0	--------	6.37	17	4	9	18
September	--------	28	--------	37.5	--------	4.37	15	9	10	11
October	--------	1	--------	16.7	--------	2.79	8	16	10	5
November	--------	−8	--------	13.7	--------	.73	2	8	19	3
December	--------	−33	17.7	.2	9.0	1.00	5	15	9	7

Condensed meteorological reports for 1924—Continued

JUNEAU. Latitude 58° 18′, longitude 134° 24′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	47	6	33.9	26.8	30.4	6.85	27	0	3	28
February	45	11	36.3	29.2	32.8	7.20	24	3	1	25
March	52	16	41.2	32.4	36.8	7.46	24	3	3	25
April	67	28	43.2	32.8	38.0	8.87	26	1	2	27
May	68	34	54.5	41.0	47.8	7.44	22	1	9	21
June	78	38	65.3	46.3	55.8	.98	7	10	6	14
July	74	42	60.3	48.8	54.6	8.23	22	2	3	26
August	78	42	61.6	49.0	55.3	7.99	21	4	5	22
September	61	34	53.5	44.1	48.8	18.85	23	2	0	28
October	54	30	47.0	37.3	42.2	12.74	24	2	2	27
November	53	18	41.3	32.0	36.6	9.53	19	6	3	21
December	49	−2	32.3	22.9	27.6	4.31	14	13	3	15

KATALLA. Latitude 60° 12′, longitude 144° 33′. Mrs. B. H. White, observer

January	44	7	36.0	27.1	31.6	8.16	22	0	3	28
February	45	5	35.8	25.6	30.7	8.87	21	5	4	20
March	45	18	39.7	30.9	35.3	10.67	22	7	1	23
April	52	11	38.8	29.4	34.1	9.00	26	2	5	23
May	60	30	50.2	38.1	44.2	7.18	21	3	10	18
June	76	36	62.4	44.8	53.6	2.69	12	13	7	10
July	66	42	59.7	47.2	53.4	7.59	15	6	10	15
August	64	37	57.7	47.7	52.7	5.81	23	4	3	24
September	60	30	53.6	39.9	46.8	13.34	21	4	4	22
October	59	26	45.4	35.0	40.2	16.69	22	4	6	21
November	53	23	43.1	31.8	37.4	9.91	18	6	6	18
December	47	2	32.5	19.5	26.0	3.17	11	8	6	17

KETCHIKAN. Latitude 55° 20′, longitude 131° 37′. A. P. Craig and W. H. Dickey, observers

January	50	16	40.8	32.0	36.4	19.14	27	3	6	22
February	49	22	43.0	33.8	38.4	15.72	27	3	4	22
March	58	19	46.7	33.6	40.2	6.46	19	9	5	17
April	65	28	46.5	35.0	40.8	12.92	29	1	6	23
May	77	33	57.9	41.9	49.9	15.26	22	12	4	15
June	80	41	67.3	45.9	56.6	1.20	10	21	4	5
July	79	42	66.0	51.2	58.6	9.28	16	14	6	11
August	77	39	65.5	50.6	58.0	8.84	20	10	7	14
September	67	38	57.5	46.4	52.0	24.04	28	4	7	19
October	60	26	51.1	39.8	45.4	21.41	31	3	3	25
November	54	15	44.9	32.9	38.9	23.93	21	8	2	20
December	50	6	36.6	27.8	32.2	9.59	17	7	4	20

KODIAK. Latitude 57° 48′, longitude 152° 22′. Experiment Station, observer

January	45	10	35.3	26.9	31.1	6.61	20	5	7	19
February	41	15	34.0	26.1	30.0	7.61	19	3	5	21
March	54	28	42.5	32.9	37.7	3.85	15	7	10	14
April	48	9	40.8	28.1	34.4	3.88	16	5	14	11
May	58	33	46.9	38.0	42.4	9.03	25	1	8	22
June	72	40	60.1	47.6	53.8	2.98	14	12	6	12
July	68	42	59.0	47.5	53.2	3.37	18	6	10	15
August	70	42	61.4	48.5	55.0	2.94	11	9	8	14
September	63	34	54.1	43.3	48.7	4.66	16	9	10	11
October	54	12	45.0	32.0	38.5	4.43	17	5	10	16
November	60	28	44.7	34.4	39.6	8.58	19	8	3	19
December	43	6	37.0	29.5	33.2	6.38	18	2	10	19

Condensed meteorological reports for 1924—Continued

LATOUCHE. Latitude 60° 03′, longitude 147° 55′. L. M. Knuppe, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	44	14	37.1	27.9	32.5					
February	46	17	41.6	28.7	35.2	26.83	22			
March	53	21	44.9	31.5	38.2	25.45	24			
April	47	12	41.5	28.5	35.0	14.98	23	4	8	18
May	64	32	53.2	38.3	40.8	10.29	19	11	3	17
June	75	38	63.4	45.4	54.4	2.28	8	14	4	12
July	71	44	61.5	48.4	55.0	9.33	17	8	3	20
August	72	42	62.0	48.7	55.4	8.86	17	8	4	19
September	66	36	57.5	42.6	50.0	16.47	23	8	5	17
October	60	28	47.9	35.9	41.9	22.45	21	6	4	21
November	53	27	46.2	33.9	40.0	24.55	19	10	1	19
December	43	9	34.3	25.9	30.1	7.80	15	10	4	17

MATANUSKA Latitude 61° 30′, longitude 149° 15′. Experiment Station, observer

January	44	−19	24.3	7.8	16.0	0.79	3	17	3	11
February	43	−13	25.3	9.1	17.2	.41	3	19	4	6
March	45	8	39.7	27.1	33.4	.26	4	18	2	11
April	55	−5	36.4	20.5	28.4	.92	8	11	9	10
May	70	26	58.1	36.1	47.1	.83	6	16	8	7
June	78	36	69.1	43.9	56.5	.71	6	12	11	7
July	75	40	67.0	46.2	56.6	.61	9	7	16	8
August	75	35	63.6	45.7	54.6	4.18	20	8	8	15
September	62	25	55.2	35.8	45.5	2.08	11	12	8	10
October	54	3	38.3	21.3	29.8	1.86	7	15	6	10
November	47	0	36.7	20.5	28.6	.07	3	17	5	8
December	35	−32	15.4	.7	8.0	.98	6	13	8	10

NENANA. Latitude 64° 31′, longitude 149° 06′. John B. Hall, observer

January	26	−44	1.0	−16.6	−7.8	0.70	3	19	1	11
February	43	−48	.7	−19.5	−9.4	.10	1	18	2	9
March	52	−14	36.7	11.8	24.2	.10	1	20	6	5
April	51	−26	25.3	−1.0	12.2	.11	2	19	5	6
May	72	23	59.1	37.5	48.3	.20	1	11	13	7
June										
July	86	39	71.7	48.7	60.2	3.30	8	12	10	9
August	81	30	66.1	45.2	55.6	3.25	8	12	8	11
September	68	22	52.4	33.9	43.2	1.40	6	19	4	7
October	50	−17	23.8	3.0	13.4	.89	5	15	2	14
November	41	−20	22.3	.2	11.2	.23	3	10	5	15
December	20	−56	−7.7	−29.4	−18.6	.35	2	23	1	7

NOME. Latitude 64° 30′, longitude 165° 24′. Weather Bureau, observer

January	32	−31	6.3	−7.6	−0.6	0.14	4	25	1	5
February	36	−36	9.4	−7.4	1.0	.36	4	17	4	8
March	36	−20	23.5	9.8	16.6	.47	11	7	5	19
April	31	−24	12.1	−4.0	4.0	.16	4	18	3	9
May	59	1	41.0	25.5	33.2	.36	5	19	1	11
June	77	28	51.0	37.7	44.4	2.79	9	12	1	17
July	65	28	52.4	42.5	47.4	3.86	20	8	2	21
August	60	30	53.3	42.9	48.1	5.82	23	6	3	22
September	55	28	47.3	36.6	42.0	2.47	16	7	5	18
October	43	7	29.3	19.3	24.3	1.71	11	9	7	15
November	36	0	27.1	17.6	22.4	.21	2	4	9	17
December	35	−21	19.3	7.2	13.2	.92	6	14	6	11

Condensed meteorological reports for 1924—Continued

NOORVIK. Latitude 66° 50′, longitude 161° 00′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	*Inches*				
January	28	−50	−4.6	−18.2	−11.4	0.59	3	23	5	3
February	27	−49	−3.4	−18.7	−11.0	.71	6	16	5	8
March	34	−27	17.2	.0	8.6	.67	11	11	5	15
April	32	−30	8.3	−14.6	−3.2	.02	1	27	2	1
May	76	−2	45.2	21.4	33.3	.43	5	20	8	3
June	85	32	60.3	40.8	50.6	2.22	13	12	4	14
July	79	33	63.4	45.7	54.6	3.33	18	5	5	21
August	67	31	56.0	42.6	49.3	5.13	19	7	2	22
September	66	25	45.6	34.6	40.1	1.77	15	6	9	15
October	44	−4	20.8	10.0	15.4	.84	6	16	2	13
November	33	−18	17.0	6.0	11.5	.91	5	13	2	15
December	29	−41	8.4	−3.5	2.4	.96	5	19	3	9

RAMPART. Latitude 65° 30′, longitude 150° 15′. Experiment Station, observer

January	19	−46	−3.7	−14.1	−8.9	1.12	14	8	5	18
February	19	−56	−5.6	−21.5	−13.6	.31	6	12	5	12
March	45	−28	33.9	3.5	18.7	.24	8	10	11	10
April	45	−33	18.4	−4.7	6.8	.25	6	16	9	5
May	73	19	54.8	32.1	43.4	.11	2	10	12	9
June	84	34	69.8	42.9	56.4	.76	9	8	12	10
July	82	33	67.6	44.4	56.0	1.93	13	7	12	12
August	81	27	63.5	41.6	52.6	1.59	16	3	8	20
September	58	21	46.2	31.0	38.6	.75	11	1	7	22
October	41	−11	21.1	11.6	16.4	1.19	13	1	8	22
November	37	−10	13.3	2.9	8.1	.21	7	3	8	19
December	26	−51	−5.5	−22.0	−13.8	.56	7	14	5	12

ST. PAUL ISLAND. Latitude 57° 15′, longitude 170° 10′. Weather Bureau, observer

January	38	7	26.8	22.4	24.6	1.21	16	2	11	18
February	33	−3	24.3	13.8	19.0	1.31	14	7	7	15
March	38	8	30.2	22.6	26.4	1.13	13	0	6	25
April	38	2	30.2	19.6	24.9	.99	15	5	7	18
May	46	14	36.8	28.5	32.6	1.12	15	1	9	21
June	56	30	45.2	36.9	41.0	2.68	18	0	2	28
July	54	36	48.8	41.7	45.2	3.18	21	0	4	27
August	52	42	49.8	44.2	47.0	3.42	28	0	8	23
September	51	35	46.9	41.3	44.1	6.02	25	0	5	25
October	48	28	39.9	34.2	37.0	5.07	24	0	10	21
November	44	25	37.0	32.2	34.6	2.33	21	3	6	21
December	40	12	34.5	30.0	32.2	1.83	23	1	10	20

SEWARD. Latitude 60° 06′, longitude 149° 27′. E. L. Sweek, observer

January	42	−2	30.0	19.4	24.7	6.71	15	2	0	29
February	48	2	32.6	20.8	26.7	9.92	16	3	0	26
March	50	15	41.0	30.4	35.7	8.18	17	8	0	23
April	49	9	39.2	26.1	32.6	5.20	11	7	0	23
May	63	32	53.3	38.1	45.7	1.70	8	9	0	22
June	76	36	63.6	46.2	54.9	.90	7	15	0	15
July	77	39	60.5	47.2	53.8	5.45	14	15	0	16
August	74	37	61.3	46.7	54.0	4.20	12	11	0	20
September	67	35	53.8	41.1	47.4	11.75	16	14	2	14
October	58	21	43.3	32.0	37.6	4.92	10	14	0	17
November	55	20	43.4	32.5	38.0	9.52	15	12	0	18
December	42	−4	29.6	17.8	23.7	1.83	7	16	1	14

Condensed meteorological reports for 1924—Continued

SITKA. Latitude 57° 03′, longitude 135° 19′. Weather Bureau, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	*Inches*				
January	49	18	41.3	32.0	36.6	9.27	26	1	7	23
February	52	18	42.5	32.0	37.2	7.92	24	5	6	18
March	56	15	45.6	33.1	39.4	6.24	22	5	10	16
April	64	22	47.4	32.8	40.1	12.12	25	3	9	18
May	65	32	55.6	40.8	48.2	3.66	18	6	10	15
June	80	39	63.1	46.3	54.7	.82	5	14	7	9
July	70	40	60.7	49.3	55.0	5.97	21	3	10	18
August	75	38	62.5	50.1	56.3	5.84	21	4	11	16
September	66	31	57.9	44.7	51.3	20.84	24	4	11	15
October	59	29	50.8	38.2	44.5	11.07	24	3	12	16
November	60	20	46.8	33.7	40.2	8.33	20	8	1	21
December	50	6	39.2	27.7	33.4	3.21	13	11	9	11

SKAGWAY. Latitude 59° 27′, longitude 135° 19′. F. J. Vandewall, observer

January	44	−5	29.9	20.9	25.4	1.55	11	6	5	20
February	46	−1	32.5	22.8	27.6	2.11	11	5	1	23
March	55	12	43.1	29.9	36.5	1.93	12	5	7	19
April	71	20	46.3	31.1	38.7	3.67	5	2	8	20
May	72	28	58.9	40.5	49.7	1.43	7	8	6	17
June	81	35	69.1	43.5	56.3	.37	4	14	11	5
July	82	40	64.4	49.3	56.8	1.16	9	4	5	22
August	80	33	65.5	46.9	56.2	2.74	12	5	8	18
September	65	27	55.8	41.3	48.6	4.77	16	5	5	20
October	60	20	47.1	34.2	40.6	5.45	19	4	5	22
November	48	6	39.1	27.1	33.1	4.72	13	12	0	18
December	46	−3	26.3	16.5	21.4	1.60	5	15	5	11

TALKEETNA. Latitude 62° 19′, longitude 150° 16′. P. W. McCarthy, observer

January	36	−30	20.0	0.5	10.2	1.16	6	13	2	16
February	41	−26	27.3	8.1	17.7	1.35	7	11	2	16
March	50	1	39.6	18.8	29.2	1.76	9	6	2	23
April	59	−23	37.4	15.1	26.2	2.34	9	6	5	19
May	72	21	59.5	32.5	46.0	2.68	7	7	13	11
June	82	31	71.4	41.4	56.4	1.31	7	13	5	12
July	80	34	69.7	41.4	55.6	1.21	8	5	7	19
August	77	30	65.7	42.6	54.2	4.68	17	4	2	25
September	68	23	58.0	32.7	45.4	4.90	12	8	4	18
October	58	−4	39.3	18.6	29.0	3.29	8	10	4	17
November	44	−8	34.2	13.3	23.8	1.18	6	13	3	14
December	33	−41	15.1	−6.9	4.1	1.81	7	17	3	11

TANANA. Latitude 65° 10′, longitude 152° 06′. Weather Bureau, observer

January	24	−47	−1.2	−15.4	−8.3	0.56	13	13	11	7
February	20	−54	−5.2	−22.0	−13.6	.23	2	15	8	6
March	45	−23	29.1	10.3	19.7	.15	3	6	22	3
April	40	−32	19.5	−3.1	8.2	.33	8	15	11	4
May	73	11	57.3	32.9	45.1	.67	5	12	12	7
June	84	33	68.8	41.4	55.1	1.12	14	10	12	8
July	81	29	65.7	44.3	55.0	3.82	15	9	11	11
August	76	24	62.0	42.8	52.4	3.46	24	3	10	18
September	59	22	48.8	33.6	41.2	.95	13	1	19	10
October	44	−10	23.7	9.7	16.7	1.71	10	9	11	11
November	33	−17	15.3	5.0	10.2	.15	4	9	12	9
December	20	−47	−1.3	−15.3	−8.3	.77	6	20	4	7

Condensed meteorological reports for 1924—Continued

VALDEZ. Latitude 61° 07′, longitude 146° 16′. W. T. Stuart, observer

Month	Temperature					Total precipitation	Number of days—			
	Maximum	Minimum	Mean maximum	Mean minimum	Monthly mean		Rain or snow	Clear	Partly cloudy	Cloudy
	°F.	°F.	°F.	°F.	°F.	Inches				
January	38	0	26.7	16.4	21.6	8.10	17	15	0	16
February	35	−7	26.4	14.2	20.3	5.47	11	23	0	6
March	36	4	34.3	20.9	27.6	--------	--------	13	0	14
April	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
May	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
June	72	30	62.7	40.8	51.8	--------	--------	14	1	8
July	71	39	59.2	44.4	51.8	2.87	18	8	7	16
August	68	34	57.5	44.3	50.9	4.89	18	7	6	18
September	67	--------	51.4	38.0	44.7	9.32	19	12	5	13
October	69	19	42.1	27.7	34.9	8.99	12	8	7	16
November	56	11	39.7	26.9	33.3	6.48	15	12	0	18
December	40	−6	24.5	11.5	18.0	2.59	7	14	4	13

WHALE ISLAND (FOX BAY). Latitude 57° 58′, longitude 152° 46′. B. C. Parker, observer

January	43	−3	34.7	23.5	29.1	5.88	16	8	8	15
February	42	5	33.5	23.7	28.6	7.31	19	8	5	16
March	58	24	42.3	31.6	37.0	4.20	14	13	6	12
April	47	6	39.6	26.6	33.1	3.78	17	14	4	12
May	63	27	48.3	37.4	42.8	7.51	21	8	4	19
June	72	34	58.8	44.0	51.4	4.07	13	19	1	10
July	67	38	59.6	46.1	52.8	2.13	11	11	9	11
August	71	38	60.7	47.7	54.2	3.00	12	18	3	10
September	62	31	54.2	40.8	47.5	5.32	17	9	4	17
October	58	20	43.6	32.7	38.2	4.19	14	10	9	11
November	55	22	44.1	31.3	37.7	11.62	19	10	2	18
December	42	2	36.3	25.4	30.8	8.41	21	4	5	22

WHITE MOUNTAIN. Latitude 64° 53′, longitude 163° 42′. E. L. Range, observer

January	34	−36	5.8	−9.3	−1.8	0.61	5	25	1	5
February	32	−45	7.1	−9.4	−1.2	.40	6	16	5	8
March	36	−19	22.5	8.9	15.7	1.49	11	7	9	15
April	34	−30	12.1	−9.3	1.4	.23	4	22	4	4
May	72	6	46.9	25.3	36.1	.44	3	19	6	6
June	83	18	58.3	37.1	47.7	1.45	9	13	1	16
July	70	16	59.3	38.1	48.7	5.40	18	4	9	18
August	68	28	55.9	42.3	49.1	5.09	20	5	7	18
September	60	24	49.2	34.4	41.8	3.07	17	4	2	24
October	49	−5	29.9	11.3	20.6	.71	7	13	7	11
November	37	−14	23.7	13.5	18.6	.58	6	10	2	18
December	35	−35	15.6	.7	8.2	.58	6	19	4	8

YUKATAT. Latitude 59° 33′, longitude 139° 44′. E. M. Axelson, observer

January	44	11	34.5	28.2	31.4	13.77	19	7	1	23
February	43	12	35.8	28.1	32.0	10.45	21	5	1	23
March	48	15	39.5	31.1	35.3	10.63	21	6	2	23
April	54	20	40.1	30.7	35.4	9.76	23	4	3	22
May	60	31	49.6	38.7	44.2	9.67	17	7	4	20
June	72	39	59.0	44.4	51.7	1.70	7	17	1	12
July	59	44	55.8	47.9	51.8	10.88	18	7	2	22
August	61	39	57.2	48.0	52.6	8.27	15	6	7	18
September	58	33	53.2	40.4	46.8	18.86	19	11	2	17
October	--------	--------	--------	--------	--------	12.47	--------	--------	--------	--------
November	47	20	40.6	32.4	36.5	10.40	20	8	4	18
December	47	6	33.0	23.7	28.4	5.00	13	13	0	18